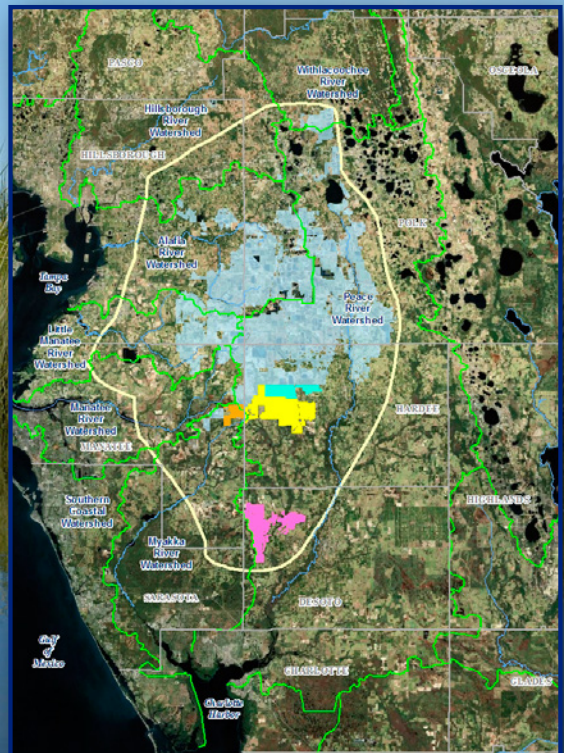


# CHAPTER 1

## PROJECT PURPOSE AND NEED



# CHAPTER 1

## PROJECT PURPOSE AND NEED

### 1.1 INTRODUCTION

#### 1.1.1 Purpose of the Areawide Environmental Impact Statement

In 2010 and 2011, the U.S. Army Corps of Engineers (USACE), Jacksonville District, received permit applications for Department of the Army permits under Section 404 of the Clean Water Act (CWA) from two phosphate mining companies in central and southwest Florida: Mosaic Fertilizer LLC (Mosaic) and CF Industries, Inc. (CF Industries). The Proposed Actions include creation of new phosphate mines, expansions of existing mines, and construction of attendant facilities. As proposed, these actions would result in the discharge of fill in waters of the United States.

Federal authorizations approving the requested permits would constitute a “Major Federal Action.” As a result, USACE determined that, when viewed collectively, the separate proposed phosphate mining-related projects had similarities that provided a basis for evaluating their environmental consequences in a single Areawide Environmental Impact Statement (AEIS). In compliance with the National Environmental Policy Act (NEPA), the AEIS will support decision-making on the existing permit applications and, as a secondary benefit, will provide information to support the evaluation of possible future applications for additional phosphate mining activity.

The USACE decision will be to issue, issue with modifications, or deny Department of the Army permits for the Proposed Actions. This AEIS is intended to be sufficient in scope to address federal requirements and environmental issues, and to assist state and local decision-makers in evaluating the Proposed Actions and permit reviews. The U.S. Environmental Protection Agency (USEPA) and Florida Department of Environmental Protection (FDEP), at the USACE’s request, have participated in the NEPA process as cooperating agencies because of their expertise in various environmental, water resource, and reclamation issues. As such, they have been involved in the development of the Draft and Final AEIS.

#### 1.1.2 Organization of the AEIS

This Final AEIS is a revision of the Draft AEIS, which was issued on June 1, 2012. The Draft AEIS was revised in response to comments the USACE received during the public comment period, which ended July 30, 2012.

Organization of the Final AEIS is similar to that of the Draft AEIS, with some modifications. Chapter 1 of the Final AEIS now includes an introduction on the purpose of the AEIS, provides a summary of comments received on the Draft EIS, and a summary of the changes made to the document as a result of the comments received. It also explains more fully the relationship between NEPA and the permitting process occurring under Section 404 of the CWA.

Chapter 2 now provides an overview of the process used to identify alternatives for consideration in the AEIS, with the details of the analysis relocated to a new appendix. Based on public comments and agency input, the onsite alternatives were removed from Chapter 2 and are discussed in the context of mitigation in Chapter 5.

Chapter 3, Affected Environment has not changed substantively, although the discussion on waste management activities associated with mining has been consolidated in this chapter, and the explanation of limitations in the distance of a beneficiation plant from mining activities has been expanded.

In Chapter 4, the presentation of environmental consequences and impacts in the Final AEIS was changed from the Draft AEIS to improve the clarity and readability of the document, with impacts categorized as minor or no effect, moderate effect, or major effect. Additional sections were added on adverse effects that cannot be avoided, the relationship between the short-term use of the environment and long-term productivity, and irreversible and irretrievable commitments of resources.

A summary of the major comment themes, within which most of the comments could be categorized, is presented in Section 1.8.9; additional evaluations conducted in response to the comments are identified in Section 1.8.10. All comment letters received are included in Appendix A, as are responses to the public and agency comments and notarized transcripts of public hearings (which also include comments).

In addition to the text changes in the body of the AEIS, Appendixes on surface water, groundwater, economics, and ecological resources have been updated to reflect additional evaluations conducted in response to public comments.

### **1.1.3 Description of the Applicants**

Mosaic and CF Industries (the Applicants) mine phosphate ore and manufacture phosphoric acid, solid and liquid fertilizers, and animal feed supplements. Mosaic's facilities in central Florida include the following:

- Four facilities that mine and process phosphate rock, including the Four Corners/Lonesome, Hookers Prairie, South Fort Meade, and Wingate Mines.
- Three facilities involved in the production of phosphate fertilizers, electrical power, animal feed ingredients, and fluoridation ingredients, including the Bartow, New Wales, and Riverview facilities.
- The Big Bend Marine Terminal at the Port of Tampa, which handles bulk phosphate rock and finished phosphate fertilizers. The facility can receive material from unit trains and trucks, and loads out to vessels.

CF Industries' facilities in central Florida include the Hardee County facility that mines and processes phosphate rock, the Plant City facility that produces phosphate fertilizer, and its Port of Tampa Terminal and Warehouse.

The USACE, Jacksonville District, has received permit applications from the Applicants in central and southwest Florida. The Proposed Actions include creation of new phosphate mines, expansions of existing mines, and construction of attendant facilities. As proposed, these actions would result in the discharge of fill in waters of the United States. The specific projects being considered, and their Department of the Army file numbers, are CF Industries' South Pasture Extension (SAJ-1993-01395; CF Industries, 2010a), Mosaic's Desoto Mine (SAJ-2011-01968; Mosaic, 2011a), Mosaic's Ona Mine (SAJ-2011-01869; Mosaic, 2011b), and Mosaic's Wingate East Mine (SAJ-2009-03221; Mosaic, 2011c). The Wingate East Mine and South Pasture Extension are extensions of existing mines.

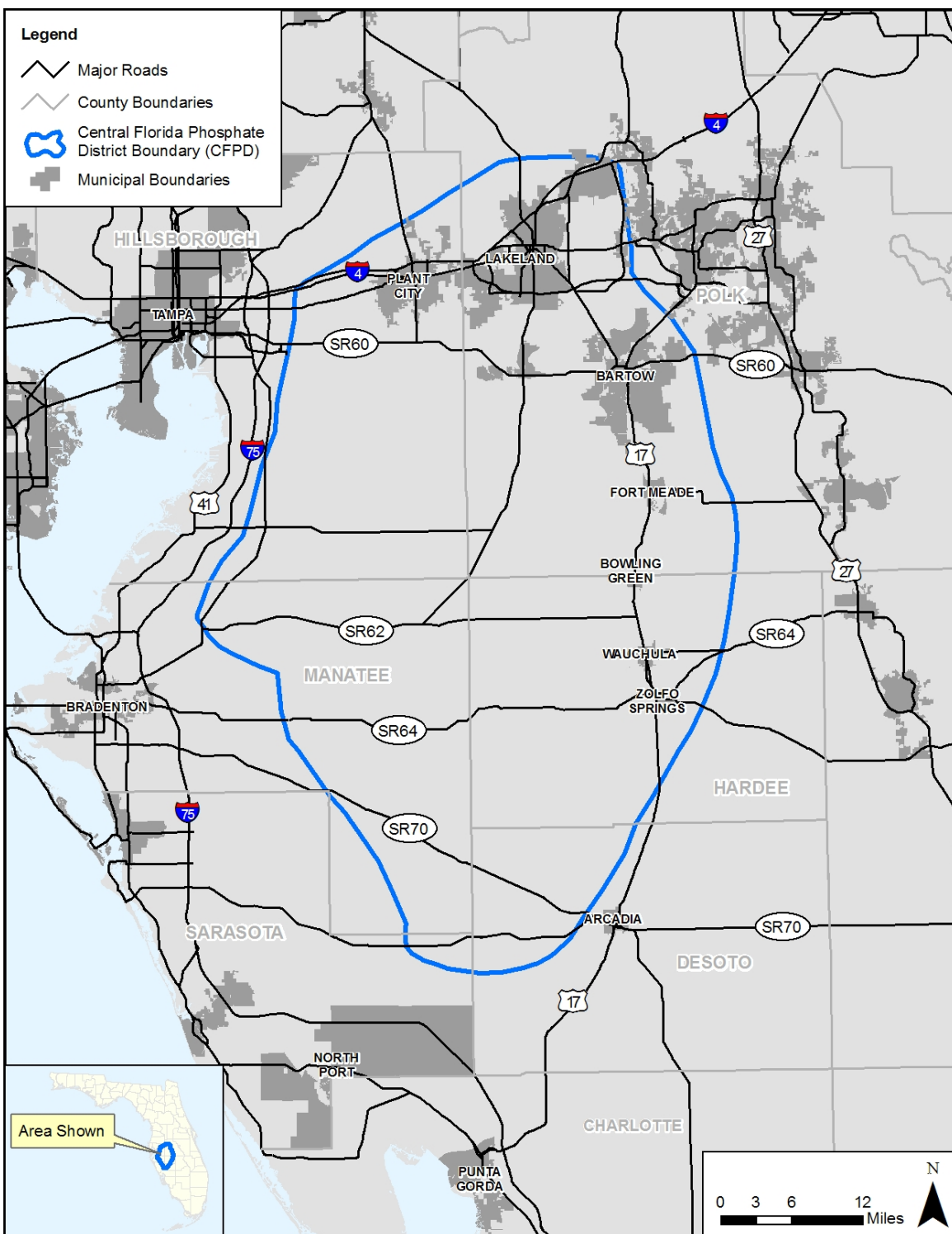
Finished products from the fertilizer production facilities may include fertilizer: diammonium phosphate (DAP), monoammonium phosphate (MAP), powdered MAP (PMAP); and feed ingredients including Biofos, Dynafos, and Multifos.

#### **1.1.4 Location**

Most phosphate mining in Florida occurs in what is commonly known as the Central Florida Phosphate District (CFPD). The CFPD, shown in Figure 1-1, is in central and southwest Florida. It extends north-south from Interstate 4 (I-4) near Lakeland, Florida, south to Arcadia, Florida, and extends to the east-west for approximately 40 miles from east of I-75 near Tampa, Florida. The Applicants have proposed four phosphate mines (two of which are extensions of existing mines) in the southern portion of the CFPD.

The CFPD consists of an area of approximately 1.32 million acres (or  $\pm 2,100$  square miles) in Hardee, Hillsborough, Manatee, Polk, and DeSoto Counties. An area of approximately 1,000 acres in Sarasota County is also included in the CFPD, although no mining occurs or is proposed by the Applicants in Sarasota County.

The term "Bone Valley" was originated by early geologists in reference to area geologic formations (e.g., the *Hawthorn Group*, *Peace River Formation*, and *Bone Valley Member*, originally the Bone Valley Formation). The term has since been used more casually to identify the larger area that may contain phosphate deposits. For the purposes of this document, the CFPD is used to identify the general phosphate-bearing area, while the term "Bone Valley" is used only when referenced in historical documents or when used in reference to specific geological formations that bear the name.



**Figure 1-1. General Location of the Study Area Including the CFPD and Adjacent Areas**

Other relevant location information includes the watersheds and major rivers, bays, and estuaries in and surrounding the CFPD (Figure 1-2). In this document, Hydrologic Unit Codes (HUCs), described by the U.S. Geological Survey (USGS) as 8-digit numerical codes to identify the geographic boundaries of areas of water as it flows across the landscape, will be used to identify watersheds; supplemental reference will be made to watershed names used by the Southwest Florida Water Management District (SWFWMD) and the Charlotte Harbor National Estuary Program (CHNEP).

There are nine watersheds in the CFPD including the Hillsborough River (HUC 03100205), Withlacoochee River (HUC 03100208), Alafia River (HUC 03100204), Tampa Bay and Coastal (HUC 03100206), Little Manatee River (HUC 03100203), Manatee River (HUC 03100202), Myakka River (HUC 03100102), Peace River (HUC 03100101), and Sarasota Bay (HUC 03100201). The Sarasota Bay watershed is also referred to as the Southern Coastal Watershed. Tampa Bay, the largest open-water estuary in Florida, extends approximately 35 miles inland from the Gulf of Mexico and is 5 to 10 miles wide along most of its length. Tampa Bay receives runoff from multiple small tributaries that originate in the CFPD, including the Hillsborough River, Alafia River, Manatee River, and Little Manatee River. Charlotte Harbor, the second largest open-water estuary in Florida, receives runoff from the Myakka River and Peace River watersheds. Figure 1-2 illustrates the study area, including the CFPD and associated watersheds.

## **1.1.5 Overview of Phosphate Development in the CFPD**

### **1.1.5.1 Synopsis**

The Cenozoic Era is represented by sediments that were deposited during the last 65 million years of geologic time, which includes the beginning of phosphate deposition in Florida during the Miocene Epoch. During this epoch, phosphorus supplies were carried by currents and waves from deep in the ocean, which led to the rapid development of large populations of marine organisms such as plankton. As these organisms died and settled to the bottom, organic material accumulated, mixed with the sediments, and was buried, only to be discovered in recent times as commercially available phosphate deposits (Florida Geological Survey, 1994).

After the discovery of pebble phosphate in the CFPD in 1881, mining in the CFPD initially involved direct extraction of minerals from many of the river beds in this geographic region. Commercial exploration and phosphate mining in the CFPD began in the late 1880s with the mining of phosphate pebbles from the Peace River between Arcadia and Fort Ogden in DeSoto County. Later technological improvements and mining economics allowed phosphate miners to move from the river-pebble to the land-pebble phosphates in the CFPD, and then to mining the fine-grained phosphate “matrix” (the naturally occurring mixture of clay, quartz sand, dolomite, and phosphate that occurs in the CFPD including southeastern Hillsborough County and southwestern Polk County).

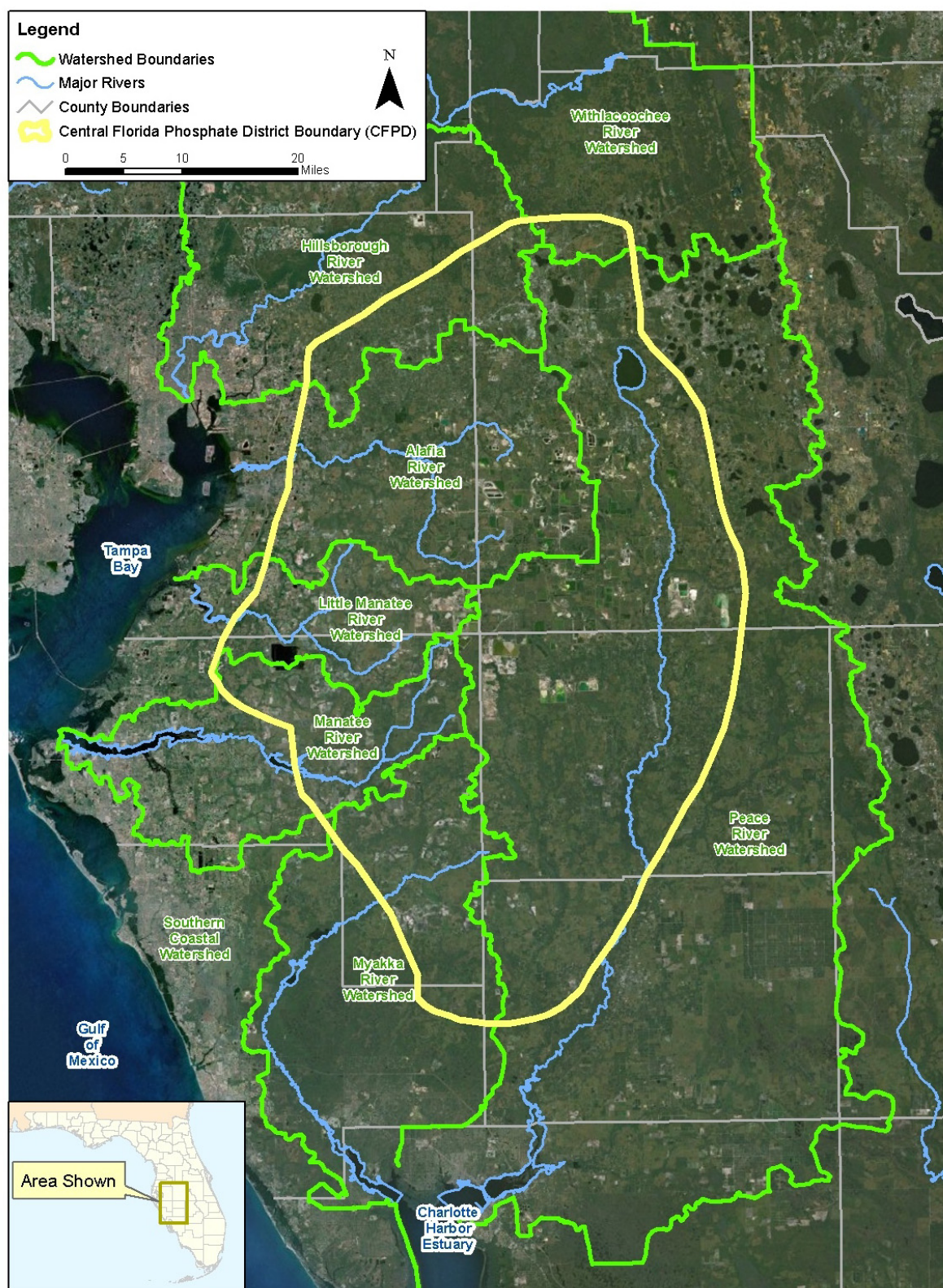


Figure 1-2. CFPD and Regional Watersheds and Estuaries

The hard-rock district includes parts of Alachua, Citrus, Dixie, Gilchrist, Hernando, Lafayette, Levy, Marion, Sumter, and Taylor Counties. In the 1960s, hard-rock mining ceased for a variety of technical and economic reasons, while at the same time mining began in the northern phosphate district, mainly in Hamilton and Columbia Counties. Starting in the late 1970s, the phosphate companies in the CFPD were predominantly mining in Polk and Hillsborough Counties, but also began moving their mining operations into the “southern extension,” located in parts of Desoto, Hardee, and Manatee Counties (Jones and Randazzo, 1997; Woolwine, undated).

#### **1.1.5.2 Creation of Communities**

Although phosphate had only been discovered less than 2 decades before, by 1895 there were 400 phosphate mining companies in Florida. The number decreased to 81 in 1900 and to approximately 30 in 1911, with 17 of those 30 working in the CFPD. In the beginning, when mining was done by hand, companies were mostly small, but these companies consolidated through their sale to larger companies. By the late 1930s, only three companies were mining in the hard-rock district of Florida around Marion County and six companies were operating in the CFPD. Most of the larger companies established villages, which provided housing for thousands of employees and their families. These villages were built concurrently with mine washing and drying equipment and other mine infrastructure because the mines were generally isolated and workers needed to live near their jobs (University of South Florida [USF] Polytechnic, 2012). The following is a partial list of historical phosphate communities in the CFPD (USF Polytechnic, 2012):

- Bone Valley – founded 1893
- Bradley – founded 1896
- Brewster – founded 1909
- Christina – founded 1907
- Coronet – founded 1906
- Kingsford – founded 1894
- Mulberry – founded 1852
- Nichols – founded 1905
- Pierce – founded 1906
- Ridgewood – founded 1906
- San Gully –founded 1914

### **1.1.5.3 Historical Technological Developments in CFPD Mining**

In the early years, phosphate mining was done with wheelbarrows, picks, and shovels, and later with mule-drawn scrapers. Mechanized excavation began between 1900 and 1905 with steam shovels. The early steam shovels held only 1 cubic yard of earth, but one steam shovel operated by three men reportedly did the work of 80 men working by hand. Steam dredges and barges came into use in hard-rock areas where the water level was too high for picks and shovels. Centrifugal pumps mounted on barges were also used to mine the river-pebble phosphate deposits in the Peace River until river-pebble mining ended in 1908.

Draglines, the current mining tool, came into use in the 1920s with the development of reliable electrical power and diesel engines. By 1930, as subsequent phases of phosphate mining moved onto land, these electrically driven draglines were adopted as the most economical way to mine land-pebble. They also were put to use in the hard-rock region. The dragline significantly changed the mining operation. For example, in 1900 it took 1 year to mine a 15-acre site with picks and shovels, while today one dragline mines approximately 15 acres in 1 month. Draglines are used to remove overburden and extract the substrate layer containing the phosphate ore and its associated sand and clay matrix.

Excavating the phosphate is only the first step of the mining process; the phosphate comes out of the ground as part of a matrix composed of the phosphate, sand, and clay. The phosphate then must be separated from the sand and clay. Early separation methods included crushing, washing, screening, and (in the case of hard-rock) picking out silica by hand on a conveyor belt.

Separation advancements in the 1920s and 1930s allowed companies to begin salvaging phosphate particles they had been discarding as waste. Improvements were made in preparing the matrix for washing and screening, finer screens were used, and equipment capacity increased. The most important change was the 1927 development of a flotation technique, which allowed the separation of phosphate rock from sand based on hydrophobic principles. Since 1942, most mining advancements have involved refining the dragline mining and flotation processes. Technology advances continue to make it possible for phosphate companies to mine and use lower quality rock. As areas have been mined out, phosphate mining activities have moved to the south (USF Polytechnic, 2012). Table 1-1 presents a partial historical summary of phosphate mining activities in the CFPD.

### **1.1.5.4 Changes in State and Federal Permitting in the CFPD**

Prior to 1975, in the absence of state or federal environmental regulations, most mined-out areas were left as they were when mining ceased. Little attempt was made to reclaim the land (return the landscape to a condition similar to pre-mining conditions and make a mined site suitable for beneficial uses, including wildlife habitat). In other words, the impacts of phosphate mining conducted during the pre-1975 “non-mandatory reclamation period” were largely un-mitigated.

**Table 1-1. Partial Historical Timeline of CFPD Mining**

<b>Year</b>	<b>Historical Milestone</b>
1881	Captain J. Francis LeBaron, a U.S. Army Corps of Engineers officer, discovers phosphate pebbles in the Peace River.
1889	Arcadia Phosphate Co. in DeSoto County mines the first commercial phosphate in Florida, beating Polk County producers by a year.
1889	John Jones and W.R. McKee create the Peace River Phosphate Co. Many other companies soon follow.
1890	Polk County's phosphate boom begins in earnest, resulting in a proliferation of mines and company-owned towns.
1891	Phosphate prices fall. Small companies begin failing.
1892	Land pebble production becomes concentrated in Polk County; river pebble production falters further south.
1893	River pebble production peaks; Great Panic strikes, sending nation into depression.
1895	Great Freeze strikes Florida, further depressing phosphate sales
1900	Mulberry forms; railroad-type steam shovels arrive
1902	Mechanized excavation begins using steam shovels and dredges
1908	Production of pebble phosphate from the Peace River ends. In the almost 20 years river pebble was mined, total production equaled 1.2 million tons.
1919	Violent phosphate strike takes place over wages and union recognition. Several residents and workers are killed during the six-month strike.
1920	First full-sized dragline employed by Swift and Co. for strip mining.
1926	Phosphate mines switch to draglines exclusively.
1927	Flotation - in which oil is used to separate phosphate from other materials - is developed, allowing companies to extract more phosphate.
1940s	Phosphoric acid is manufactured.
1950s	Phosphate company-owned towns slowly phase out.
1960s	Phosphate experiences its biggest boom, prompting many oil companies to invest in the industry.
1975	Land reclamation becomes mandatory in Florida.
1978	Florida Institute for Phosphate Research established in Bartow.
1980s	Consolidation of phosphate companies begins.
1990s	Mining operations start moving south.
2000s	As mining in Polk and Hillsborough Counties gradually ends, the industry moves southward to unmined reserves in Hardee, Manatee, and DeSoto Counties.
Source: <i>Florida Phosphate Mining: Phosphate Through The Years</i> (Mulberry Phosphate Museum, 2012)	

1

2 In 1971, the Florida Legislature passed Chapter 211, Florida Statutes (F.S.), which imposed a severance

3 tax on solid minerals mined in the state. The intent of this law was to encourage voluntary reclamation of

4 mined lands by providing up to half of the tax to be refunded for costs incurred in reclamation. This statute

5 was amended in 1975 to mandate reclamation of lands mined after July 1, 1975.

This law was further modified in 1977 to encourage the reclamation of lands mined for phosphate before July 1, 1975, by reimbursing the taxpayer (the mining company) a portion of the severance taxes paid by that taxpayer. This “non-mandatory” reclamation program provided reimbursement of severance taxes paid to the state prior to July 1, 1978 for lands disturbed prior to July 1, 1975, or for lands that had been included in a reclamation program filed with the Department of Natural Resources (DNR) by July 1, 1977, to encourage rehabilitation of lands mined prior to 1975. Subsequent to 1978 landowners (mine companies and other landowners) were eligible to apply for non-mandatory reclamation grants under Rule 16C-17, Florida Administrative Code (F.A.C.), funded by the severance tax portion which funds the Land Reclamation Trust Fund. Chapter 211, F.S., Chapter 378, F.S., and Rule 62C-17, F.A.C., also established reclamation standards and reimbursement cost limits for the reclamation land types such as wetlands and uplands.

Currently, reclamation standards for phosphate lands include contouring to safe slopes, providing for acceptable water quality and quantity, revegetation, and the return of all mined lands to beneficial uses. These standards are set forth in Chapter 378, F.S. Specific reclamation standards for phosphate lands are detailed in Chapter 62C-16, F.A.C. (FDEP, 2009).

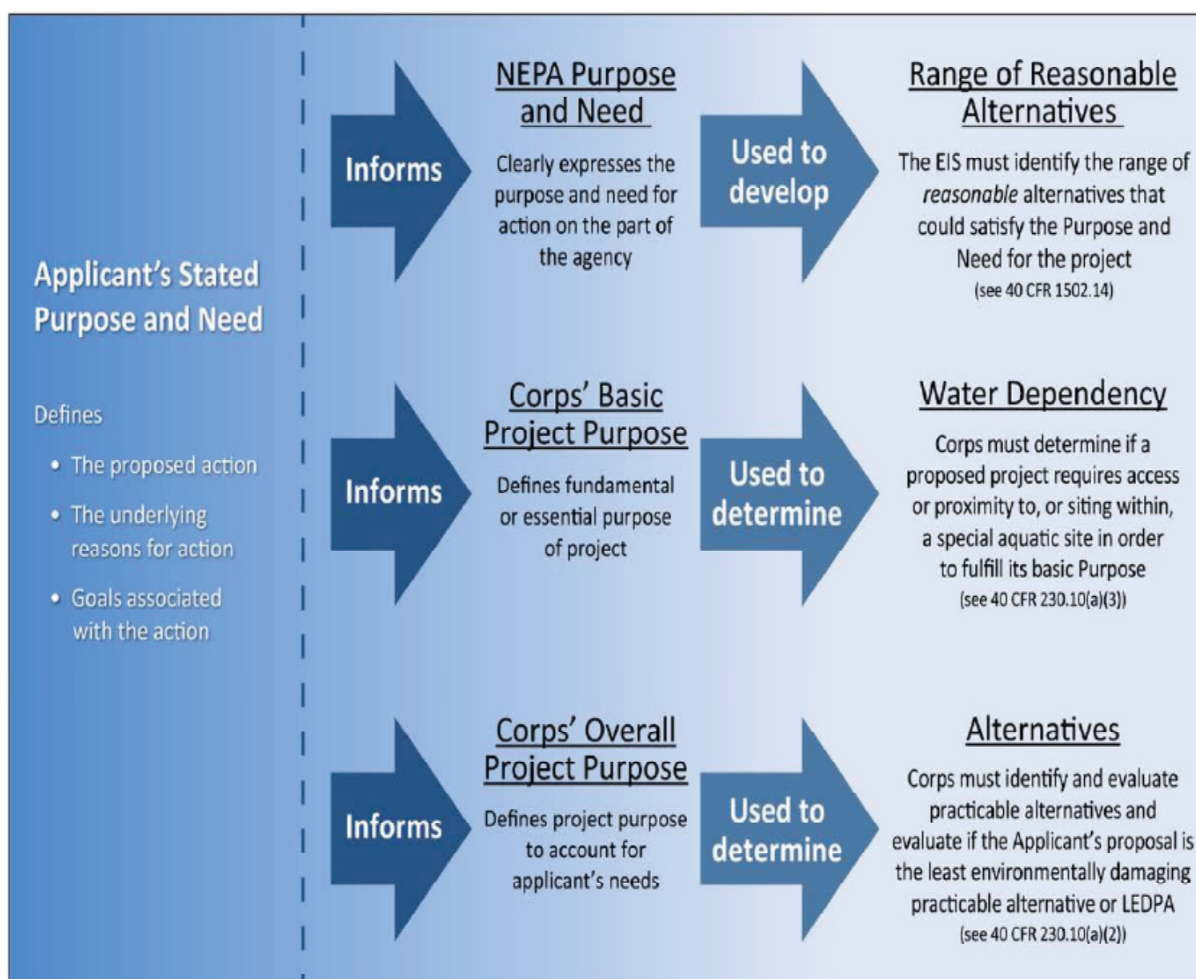
USACE has issued Department of the Army (DA) permits under Section 404 of the CWA (33 United States Code [U.S.C.] 1251 et seq.) for phosphate mining in the CFPD since 1977. Existing permits authorize mining through 2028. In addition, USEPA and FDEP began regulating discharges of mine process water under Section 402 of the CWA and Chapter 403, F.S., respectively and SWFWMD began regulating well water withdrawals under Chapter 373 F.S. during the 1970s. Additional required permit actions are discussed in Section 1.5.

## **1.2 PROJECT PURPOSE AND NEED**

In accordance with NEPA, an Environmental Impact Statement (EIS) “shall briefly specify the underlying purpose and need to which the agency is responding” (Title 40 Code of Federal Regulations [CFR] Part 1502.13). When considered together, the “purpose” and the “need” for the project establish the basic parameters for identifying the range of alternatives to be considered in an EIS.

Under NEPA (33 CFR Part 325, Appendix B) and Section 404 of the CWA pursuant to the Section 404(b)(1) Guidelines (40 CFR Part 230), there are three ways that the USACE is to examine the underlying goals, or purpose, of a project:

1. The applicant’s stated purpose and need
2. A “basic” purpose defined by the USACE specifically for addressing a project’s water dependency
3. An “overall” purpose, which is defined by the USACE and is used for the alternatives analysis (Figure 1-3)



**Figure 1-3. Applicants' Stated Purpose and Need**

Pursuant to 33 CFR Part 325, Appendix B, when defining the purpose and need for a project "while generally focusing on the applicant's statement, the USACE will in all cases, exercise independent judgment in defining the purpose and need for the project from both from the applicant's and the public's perspective." Section 1.2.1 defines the Public's Need as applied to the proposed projects, which are also referred to as the Applicants' Preferred Alternatives.

**Interpreting the Applicant's Stated Purpose and Need.** An applicant's stated purpose and need is an expression, typically in the applicant's own words, of the underlying goals for a proposed project. The USACE takes an applicant's purpose and need into account when determining the overall purpose and the

project purpose and need. The Applicants' purpose and need is described in Section 1.2.2. The Applicants' need for the proposed projects is to provide for increased or extended domestic phosphate ore production.

**Defining the USACE's Basic Project Purpose.** The USACE uses the basic project purpose to determine water dependency [40 CFR 230.10(a)(3)]. If a project is not water-dependent, other alternatives that would not result in impacts to special aquatic sites are presumed to be available. The Section 404(b)(1) Guidelines say that practicable alternatives to non-water-dependent activities are presumed to be available and to result in less environmental loss unless clearly demonstrated otherwise by the applicant [40 CFR 230.10 (a)(3)]. Section 1.2.3 defines the USACE's basic project purpose as applied to the Applicants' Preferred Alternatives.

The Section 404(b)(1) Guidelines are among the substantive criteria that the USACE uses to evaluate a permit. The Section 404(b)(1) Guidelines establish two rebuttable presumptions. First, for a non-water-dependent project, the Guidelines presume that less damaging alternatives exist, which do not require discharge into a special aquatic site. Second, the Guidelines presume that "upland" alternatives result in less environmental loss than wetland alternatives.

**Defining the USACE's Overall Project Purpose.** The USACE uses the overall project purpose to define alternatives for evaluation in an EIS and to determine whether an applicant's proposed project is the least environmentally damaging practicable alternative (LEDPA) under the Section 404(b)(1) Guidelines. According to USACE guidance in its 2009 Standard Operating Procedures, "The overall project purpose should be specific enough to define the applicant's needs, but not so restrictive as to constrain the range of alternatives that must be considered under the Section 404(b)(1) Guidelines.

Defining the overall project purpose is the district's responsibility. However, the applicant's needs and the type of project being proposed should be considered. The USACE's overall project purpose more specifically addresses the Applicants' purpose and need than does the USACE's basic project purpose. The USACE's overall project purpose, as applied to the Applicants' Preferred Alternatives, is defined in Section 1.2.3.

## **1.2.1 The Public's Need**

### **1.2.1.1 Need for Phosphate Rock**

Phosphorus is an essential nutrient needed to sustain plant and animal life, and there is no substitute for it. Plants absorb phosphorus, in the form of phosphate, from the soil and convert it to forms that can be absorbed by people and animals. With respect to agriculture, fertilizer application replenishes phosphate in the soil and enhances crop yields. The same can be said for areas used for grazing by livestock. With respect to animal feed supplements, the inclusion of phosphates is necessary for the formation and function of bones, brain, blood, and tissues (Kennedy, 1990). Minor amounts of phosphate are also processed for use in such consumer products as soft drinks, toothpaste, foods, and flavors. Industrial uses include metal cleaning and aluminum finishing industries.

Phosphate rock minerals are the only significant global commercial sources of elemental phosphorus (U.S. Department of the Interior, Bureau of Mines, 1987; USGS, 2004a). According to the USGS, more than 95 percent of the U.S. phosphate rock mined is used to manufacture wet process phosphoric acid, used in the manufacture of granular and liquid ammonium phosphate fertilizers and animal feed supplements. As a result, the largest user of phosphorus is the agricultural sector.

To describe phosphate rock production, the USGS reports values in terms of “marketable production,” referring to beneficiated phosphate rock with suitable phosphorus pentoxide ( $P_2O_5$ ) content for subsequent processing as phosphoric acid or elemental phosphorus manufacturing. Quantities are typically reported in metric units (i.e., metric tons [mt] or as million metric tons [Mt]). U.S. phosphate rock production has declined since 2005 because of the depletion of reserves and the closure of several mines, including two world-scale mines in central Florida (Kingsford Mine in September 2005 and Fort Green Mine in May 2006). Global phosphate use increased 33 percent or 1.8 percent per year between 1995 and 2011, with a dip in 2008/2009 because of the global economic downturn, according to estimates by the International Fertilizer Industry Association (IFA, 2012a). Global demand is expected to continue to increase at a comparable rate in the future.

According to the USGS, domestic phosphate rock production totaled 28.1 Mt in 2011, 25.8 Mt in 2010, and 36.1 Mt in 2005. Phosphate rock consumed in the U.S. was 32.0 Mt in 2011, 30.5 Mt in 2010, and 37.8 Mt in 2005. U.S. rock production has declined over the last 15 years, and rock production in countries outside the United States has increased to meet the growth in global phosphate rock demand. World production of phosphate rock increased to 191.0 Mt in 2011, up 4 percent from 2010 and up 18 percent from the lower level in 2009, according to statistics from the International Fertilizer Association (IFA, 2012b). Global phosphate demand continues to climb, largely because of increasing demand from Brazil, India, China and other developing countries for fertilizer as well as a rebound from the economic downturn of prior years. The USGS identified the following “Events, Trends, and Issues” in *Mineral Commodity Summaries 2011* (USGS, 2011):

*“In 2011, domestic production and consumption of phosphate rock increased from that of 2010 owing to increased phosphoric acid and fertilizer production. Export sales of phosphate fertilizers, primarily MAP, increased from that of 2010. U.S. imports of phosphate rock were estimated to have increased by nearly 1 million tons from those of 2010 because of imports of phosphate rock from Peru, where the leading U.S. phosphate fertilizer producer has a 35% stake in the only phosphate rock mine in that country.”*

Annual production of marketable phosphate in the U.S. has declined by approximately 10 Mt since 2002. Production has generally followed trends in consumption, although the ability to maintain reserve stocks accounts for the slower decline in production rates. Consumption followed economic trends with declines from 2005 to 2009. Although consumption increased in 2010, the production of phosphate did not

appreciably increase because companies used reserve stocks of phosphate rock to satisfy demand (USGS, 2011). The U.S. phosphate rock mining industry has not exported phosphate rock since 2003 and has imported an average 2.5 Mt each year since 2002 to meet U.S. demands. Phosphate product imports and exports from the U.S. fluctuated over the period from 2006 through 2011. While the U.S. does not export phosphate rock, approximately 45 percent of the wet process phosphoric acid produced was exported in the form of upgraded granular DAP and MAP fertilizer, and merchant-grade phosphoric acid (USGS, 2011).

World phosphate rock annual production capacity is projected to increase by 26 percent from 2010 to 2015 (from 203 Mt to 256 Mt), with most of this increase coming from Africa and the Mideast. U.S. production will likely remain the same or decrease slightly through 2015 (USGS, 2011). Domestic phosphate rock in the U.S. was mined by 6 firms in 2010 at 12 mines in 4 states. Table 1-2 lists these mines and their locations.

**Table 1-2. Active Phosphate Mines in the U.S. as of 2010**

Owner/Operator	Mine Name	Mine Location
Mosaic	Four Corners/Lonesome	Hillsborough/Manatee, FL
Mosaic	Hookers Prairie	Polk County, FL
Mosaic	Hopewell	Hillsborough County, FL <sup>a</sup>
Mosaic	South Fort Meade	Polk and Hardee County, FL
Mosaic	Wingate	Manatee, FL
CF Industries	South Pasture	Hardee County, FL
Nu West Industries, LLC <sup>b</sup>	Dry Valley	Caribou, ID
P4 Production <sup>c</sup>	South Rasmussen	Caribou, ID
PCS Phosphate, Inc.	Aurora	Beaufort, NC
PCS Phosphate, Inc.	Swift Creek	Hamilton, FL
Simplot, J.R., Co.	Smoky Canyon	Caribou, ID
Simplot, J.R., Co.	Vernal	Uintah, UT
Source: USGS, 2011 <sup>a</sup> Hopewell Mine subsequently closed in January 2011 due to depletion of reserves. <sup>b</sup> Owned by Agrium U.S. Inc. <sup>c</sup> Owned by Monsanto Co.		

A thirteenth mine located in Idaho is under review for permitting; this production is planned to replace an existing mine. In 2010, Florida's 7 mines provided 16.8 Mt (or 65 percent) of domestic annual production (USGS, 2011), with approximately 13.2 Mt (51 percent) of the domestic production obtained from the CFPD.

1 In 2010, the United States was the second largest producer of phosphate rock in the world, with Florida  
2 producing more than two-thirds of the domestic phosphate rock for the year (Nyiri, 2011). Increasing  
3 mining and production costs and ore depletion are expected to reduce the Florida contribution to the  
4 phosphate market (USGS, 2001; USGS, 2010). Four mines have closed in Florida since mid-1999  
5 because of corporate restructuring and depletion of reserves. In response to economic conditions, Agrifos  
6 closed its Nichols Mine in 2000 and relied exclusively on imported rock, as cited in *Fertilizer Markets*  
7 (2001). In 2001, phosphate rock production decreased for the fifth consecutive year to reach its lowest  
8 point since 1965. In 2004, nine mines were active in Florida (Mosaic operated seven mines, CF Industries  
9 operated one mine, and PCS Phosphate Co., Inc. operated one mine), whereas seven mines are active  
10 now. Nineteen phosphate rock mines were permanently closed in the last two decades in the U.S.; most  
11 of these closures were in Florida (Nyiri, 2011).

12 At least two of the existing phosphate rock mines in Florida are expected to close before 2020 because of  
13 depleted reserves. Four additional Florida mines are forecast to close before 2030. If no new mines are  
14 developed, only one phosphate rock mine is expected to be active in Florida by 2030. Even this last  
15 remaining mine in North Florida may be closed because of dwindling reserves. Additionally, two U.S.  
16 phosphate rock mines outside Florida are expected to close by 2030, resulting in no more than five mines  
17 operating in the U.S. by 2030 (Nyiri, 2011). The existing active mines in the CFPD (Hookers Prairie,  
18 Wingate Creek, Four Corners/Lonesome, South Fort Meade, and South Pasture Mines) are at various  
19 stages of completion of their respective life spans. Table 1-3 presents information on the planned  
20 temporal relationships between the existing mines and currently proposed mining projects. As shown in  
21 the table, the applications under review by the USACE would, if issued, maintain current production rates  
22 through 2035, rather than result in an aggregate increase in production rates.

23 Even with the decline of Florida phosphate rock production and the anticipated increase in worldwide  
24 demand, there does not appear to be a worldwide shortage of phosphate rock. Total world phosphate  
25 reserves are estimated to be 67,000 Mt, compared to U.S. phosphate reserves of approximately  
26 1,400 Mt. The total world mine production of marketable phosphate concentrate in 2011 was estimated to  
27 be 198 Mt (USGS, 2013a). However, as noted previously, the U.S. no longer produces a surplus of  
28 phosphate rock and instead is increasingly reliant on imported phosphate rock to meet increasing  
29 demands for food supplies in the U.S. and elsewhere (Lifton, 2011). Exports have shifted predominantly  
30 to finished phosphate products. Additionally, while global supplies of phosphate rock are abundant, these  
31 supplies are concentrated in a relatively small part of the world. The political security of these supplies is  
32 lacking, with disruptions a common occurrence (Lifton, 2011). Production of phosphate rock by Florida  
33 mines (including those in the CFPD and the PCS mine in Hamilton County) has averaged 65 percent of  
34 the U.S. production for the last 5 years, with a majority of this (55 percent) being obtained from Mosaic  
35 operations (USGS, 2006-2010). From 2005 through 2010, the volume of minable rock produced by  
36 Mosaic has ranged from 13.2 Mt to 20.9 Mt, averaging 18.8 Mt annually (Mosaic, 2011c).

**Table 1-3. Relationships between Rock Production Rates and Operation Periods for Existing and Proposed Phosphate Mine Projects in the CFPD**

Existing Mine	Proposed Mine	Estimated Annual Rock Production (million short tons/year) <sup>a</sup>	Year		
			Proposed New Beneficiation Plant Milestones <sup>b</sup>	Estimated Start of Rock Production	Estimated End of Rock Production <sup>c, d</sup>
Mosaic Mine Projects					
Four Corners/ Lonesome		6.1	NA	Ongoing	2019
	Ona	6.0	Engineering: 2015; Construction: 2017	2020	2048
Hookers Prairie		1.9	NA	Ongoing	2014
South Fort Meade		4.3	NA	Ongoing	2020
	Desoto	6.0	Engineering: 2016; Construction 2018	2021	2035
Wingate Creek		1.3	NA	Ongoing	2013
Wingate Extension <sup>e</sup>			NA	2013	2046
	Wingate East		NA	2015	
CF Industries Mine Projects					
South Pasture		3.5	NA	Ongoing	2035
	South Pasture Extension		NA	2020 <sup>f</sup>	2033 <sup>f</sup>

## Notes:

<sup>a</sup> For Mosaic projects, production rates estimated at 85 percent of estimated mining capacity; for CF Industries projects, estimated mining capacity is shown. Rates may fluctuate on an annual basis.

<sup>b</sup> Applicable beneficiation plant milestones contingent on receipt of federal wetlands permits for Ona and Desoto Mines.

<sup>c</sup> Estimated end of mining for Hookers Prairie, Four Corners, Wingate Creek, and South Fort Meade Mines potentially could be extended through infill projects, e.g., mining occurring on parcels that have at least one, but often multiple common boundaries, with an existing mine (contingent on new land purchases or mineral rights acquisition, and associated permit authorization); CF Industries projections anticipate some mining for both South Pasture and the proposed South Pasture Extension would occur concurrently for approximately the next 15 years, with the total production capacity from all draglines as shown.

<sup>d</sup> Reclamation activities would extend beyond these dates to account for mine cut and clay settling area (CSA) reclamation in accordance with state regulatory requirements.

<sup>e</sup> Wingate Extension is to involve only uplands mining to allow continued mining while the Wingate East federal wetlands permit review is conducted.

<sup>f</sup> CF Industries' original application proposed land disturbance to occur in 2018 and rock production to occur by 2020. Local Hardee County mining approvals have accelerated that proposed schedule to provide for mining as early as 2016.

NA = not applicable, matrix to be processed at existing beneficiation plants.

Source: Projected schedule information for Mosaic mines provided in Section 404 permit applications of June 2011, with further clarifications received from Mosaic January 17, 2012; projected schedule information for CF Industries projects drawn from Section 404 permit application dated April 28, 2010, as revised and updated on September 16, 2011 (CF Industries, 2011a), with clarifications received from CF Industries in January 2012.

Quantities of phosphate rock and other weights of matrix or beneficiation products (rock, sand, and clay) are typically presented in short tons (million), as shown in Table 1-3 and provided in permit applications and reclamation plans. As discussed above, the CFPD deposit is one of the few remaining minable deposits in the U.S., and provides 51 percent of the U.S. supply as of 2010. Over the last 100 years, the primarily northern portion of the CFPD yielded more than 2,000 Mt of phosphate rock; this area has been essentially mined out. An estimated 600 Mt of minable phosphate rock may still be found within the “Southern Extension” of the Hawthorne Formation in the study area, although these deposits are generally of lower quality and contain too much iron, aluminum, or magnesium contamination to be processed using the wet acid process.

#### **1.2.1.2 Historical and Current Economic Importance**

Direct economic effects for each mine operation are the jobs associated with that operation and include mine construction, beneficiation, and mine support spending. Direct effects also include certain taxes and other fees paid by the operator. The Florida Industrial and Phosphate Research Institute (FIPR Institute) reports, for example, that the phosphate industry also owns or has mineral rights to about 443,210 acres of Florida land (200,000 acres has been mined in Polk County alone) and has a multi-billion dollar capital investment in the state (FIPR Institute, 2012). Mining in the area of the CFPD has provided an important socioeconomic impact to the region. For example, a study conducted for Mosaic by ECONorthwest predicted that the Mosaic mines operating in the five- county region (Desoto, Hardee, Hillsborough, Manatee, and Polk Counties) would increase economic output by \$62.7 billion, and labor income by \$7.3 billion, compared with the no-mining alternative over a 40-year study period (ECONorthwest, 2011). Predicted jobs and economic output are summarized in Table 1-4. The Mine Safety and Health Administration (MSHA) reported in 2003 that 6,978 persons were employed in Florida’s surface mining operations with the phosphate industry employing 2,214 of those workers. The Florida Phosphate Council’s 2004 fact sheet states that the phosphate mining and fertilizer industries together provide workers with an average income of \$72,000, which is well in excess of the average income of the counties in the CFPD (Florida Phosphate Council, 2004, as cited in FIPR Institute, 2012). Mosaic indicates that as of its 2010, its mine workers were paid on average nearly \$81,500 each in wages and benefits per job (ECONorthwest, 2011). Direct economic impacts of mining also include mine support spending, such as engineering, permitting, accounting work, and other services such as construction support—some of which is done offsite but in the local area. Other benefits are associated with contracts with local businesses that provide a wide range of supporting goods and services (ECONorthwest, 2011).

Numerous local and regional economic interests also are indirectly associated with the phosphate mining industry in the CFPD. A substantial indirect effect of the mining is associated with the export of finished phosphate products and fertilizer through the Port of Tampa each year (World Port Source, 2012), contributing significantly to making the port the state’s largest in tonnage shipped and about the 10th largest in the nation. In 2002, phosphates, finished phosphate products, fertilizer, and phosphate rock

accounted for 10.7 million tons (90 percent) of the port's outbound tonnage (Moody et al., 2002). The U.S. phosphate rock mining industry has not exported phosphate rock since 2003 and has imported an average 2.5 million tons each year since 2002 to meet U.S. demands. The Moody report stated that producing such outbound commodities contributed 6,719 jobs to the Tampa Bay region in 2001 and 5,544 of these were related to the phosphate industry. A 2006 economic study indicated that 9,255 direct jobs at the port were related to phosphate rock and phosphate products and states that the movement of phosphate by port shippers and consignees such as Mosaic and CF Industries creates more than 67,000 jobs, generating \$4.3 billion in personal income in the regional economy annually (Martin Associates, 2006).

**Table 1-4. Estimated Job and Economic Benefits Derived from Operation of Proposed Mines under the Applicants' Preferred Alternatives**

Proposed Mine	New or Retained Jobs	Annual Tax Revenue (State and County)	Time Frame for Mining (years)
Desoto	717	\$3.0 million	16
Ona	1,233	\$7.7 million	30
Wingate East	332	\$1.8 million	36
South Pasture Extension	145	\$4.7 million	12
Notes: 1. Jobs data are output from IMPLAN model. 2. Tax revenue data calculated by CH2M HILL. 3. County approvals for the South Pasture Extension include an Economic Development Agreement that will provide for an additional \$10 million from CF Industries to Hardee County during the first three years of mining, which is to be applied to education and recreation in Hardee County.  Sources (mining time frame): CF Industries, 2010a; Mosaic, 2011a; Mosaic, 2011b; Mosaic, 2011c.			

The Florida Phosphate Council's 2004 fact sheet (Florida Phosphate Council, 2004, as cited in FIPR, 2012) reported that the industry spent \$71.7 million on capital expenditures for systems to control and treat pollution and conserve water. An additional \$140.9 million was spent, according to the fact sheet, to operate, maintain and monitor those pollution control and water conservation systems.

The phosphate industry is also a major source of tax revenue to the state and CFPD local governments. Revenues are derived from severance, ad valorem, tangible personal property, and sales tax revenues. Severance tax revenues, which are at least partially collected to compensate the state and local governments for costs they incur to address environmental issues associated with mining, generated about \$33.7 million in revenues to the state in 2010. A portion of these revenues is returned to the counties where the mines are located. The revenues returned to the counties amounted to \$7.5 million in 2010. Ad valorem and tangible personal property tax revenues are also collected on the lands owned by the mining operations and associated improvements. In addition, sales taxes are collected on the goods and services that the mining operations purchase from suppliers. Mosaic and CF Industries have indicated that approximately half of the goods and services it purchases are from local suppliers (in the CFPD).

## **1.2.2 Applicants' Purpose and Need**

The Applicants' purpose and need forms the basis for the alternatives analysis. The Applicants provided the following statements on purpose and need in the four phosphate mines permit applications that led to preparation of this AEIS.

### **1.2.2.1 Mosaic**

#### **Basic Project Purpose**

The basic project purpose is to extract phosphate ore.

#### **Overall Project Purpose**

The overall project purposes identified in the individual mining applications are:

**Mosaic Fertilizer LLC Wingate East Mine Expansion (SAJ-2009-03221).** The overall project purpose is to maximize extraction of phosphate ore from the known mineral reserves located within a practicable pumping distance from the Wingate Creek ore separation/beneficiation plant and to maintain production capabilities of existing beneficiation facilities at optimum production levels.

**Mosaic Fertilizer LLC Ona Mine (SAJ-2011-01869).** The overall project purpose is to maximize extraction of phosphate ore from the mineral reserves located within a practicable pumping distance sufficient to maintain a strategically located new Ona ore separation/beneficiation plant and to maintain production capabilities of existing adjacent mining beneficiation facilities at optimum production levels.

**Mosaic Fertilizer LLC Desoto Mine (SAJ-2011-01968).** The overall project purpose is to maximize extraction of phosphate ore from the mineral reserves located within a practicable pumping distance sufficient to maintain a strategically located new Desoto ore separation/beneficiation plant and to maintain production capabilities of existing mining beneficiation facilities at optimum production levels.

#### **Stated Purpose and Need**

Phosphorus is an essential element for plant and animal nutrition and is consumed primarily as a principal component of nitrogen-phosphorus-potassium fertilizers. Phosphate rock minerals are the only significant global resources of phosphorus (USGS, 2011). There is no natural or synthetic substitute for phosphorus, which is essential for life in all growing things, plants and animals alike. There currently is no economical alternative to phosphate rock as the major source of phosphorus (Gurr, 2010). Fertilizers are increasingly important to improve crop yields needed to feed a growing world population. The rapid growth in farm output that defined the 20th century has slowed to the point that it is failing to keep up with the demand for food consumption of the four staples that supply most human needs – wheat, rice, corn, and soybeans – which has outstripped production for much of the past decade. The imbalance between supply and demand has resulted in two huge spikes in international grain prices since 2007. Those price jumps,

though felt only moderately in the west, have worsened hunger for tens of millions of poor people, destabilizing politics in scores of countries (Gillis, 2011). Fertilizers add one billion tons to our annual food supply, and without synthetic fertilizers, as much as 40 percent of the world's people could not eat (Lugar and Borlaug, 2010). U.S. farmers are the most productive in the world, providing the foodstuffs to meet domestic demand, as well as a tremendous quantity of exported food for the rest of the world (USGS, 1999). The U.S. is the leading supplier of process phosphates in the world (USGS, 1999). The worldwide demand for phosphate fertilizers is expected to increase gradually in proportion to the increase in world population (Gillis, 2011).

#### **1.2.2.2 CF Industries**

##### **Basic Project Purpose**

The basic project purpose is the extraction of phosphate ore reserves.

##### **Overall Project Purpose**

**CF Industries South Pasture Extension (SAJ-1993-01395).** The overall project purpose is to economically extend the operational life of its existing South Pasture mining facilities and beneficiation plant for as long as practicable by mining all commercially available phosphate reserves that are a practicable pumping distance from the South Pasture Plant.

##### **Stated Purpose and Need**

Phosphorus is an essential element for plant and animal nutrition and is one of the primary nutrients necessary for plant growth. If phosphorus is not present in the soil, it must be added in order to achieve economically practical crop yields. Phosphorus is added to soils primarily as a principal component of nitrogen-phosphorus-potassium (NPK) fertilizers. It is made from phosphate rock, which is the only known economically viable source of phosphorus. There are no known synthetic substitutes (USGS, 2008a; USGS, 2008b). Man-made fertilizers containing phosphorus have had a tremendous impact on farm productivity and food availability, as well as improving our overall quality of life and fostering economic expansion in this country. In the United States, large-scale, high-yield farming made possible through phosphate fertilizer production has led to cheap, readily available food products and in turn a well-fed and diversified non-agrarian workforce. In 1950, for example, the average U.S. farmer produced enough food to feed 27 people. Since then, thanks to advances in fertilizers, seeds, herbicides, pesticides, and farming practices, average yields of all crops have increased by 55 percent. The average farmer now produces enough food to feed more than 120 people (The Fertilizer Institute, 2008; USGS, 2008a; USGS, 2008b). This unprecedented improvement in crop yields has had important environmental benefits, too, significantly reducing the amount of land required to feed a growing world population. The United States phosphate industry is largely concentrated in Florida. Continued mining of phosphate rock is therefore

critical to the agriculture industry as well as to the general population both U.S. and globally. Maintaining a domestic food supply is also important to national security.

### **1.2.3 USACE Defined Project Purpose and Need**

#### **1.2.3.1 USACE Basic Project Purpose and Water Dependency**

The basic purpose of the project as defined by the USACE is to mine phosphate ore. In general, mining of phosphate ore does not require access or proximity to a special aquatic site. Therefore, the USACE finds that the basic purpose of the project is not water-dependent.

#### **1.2.3.2 USACE's Overall Project Purpose**

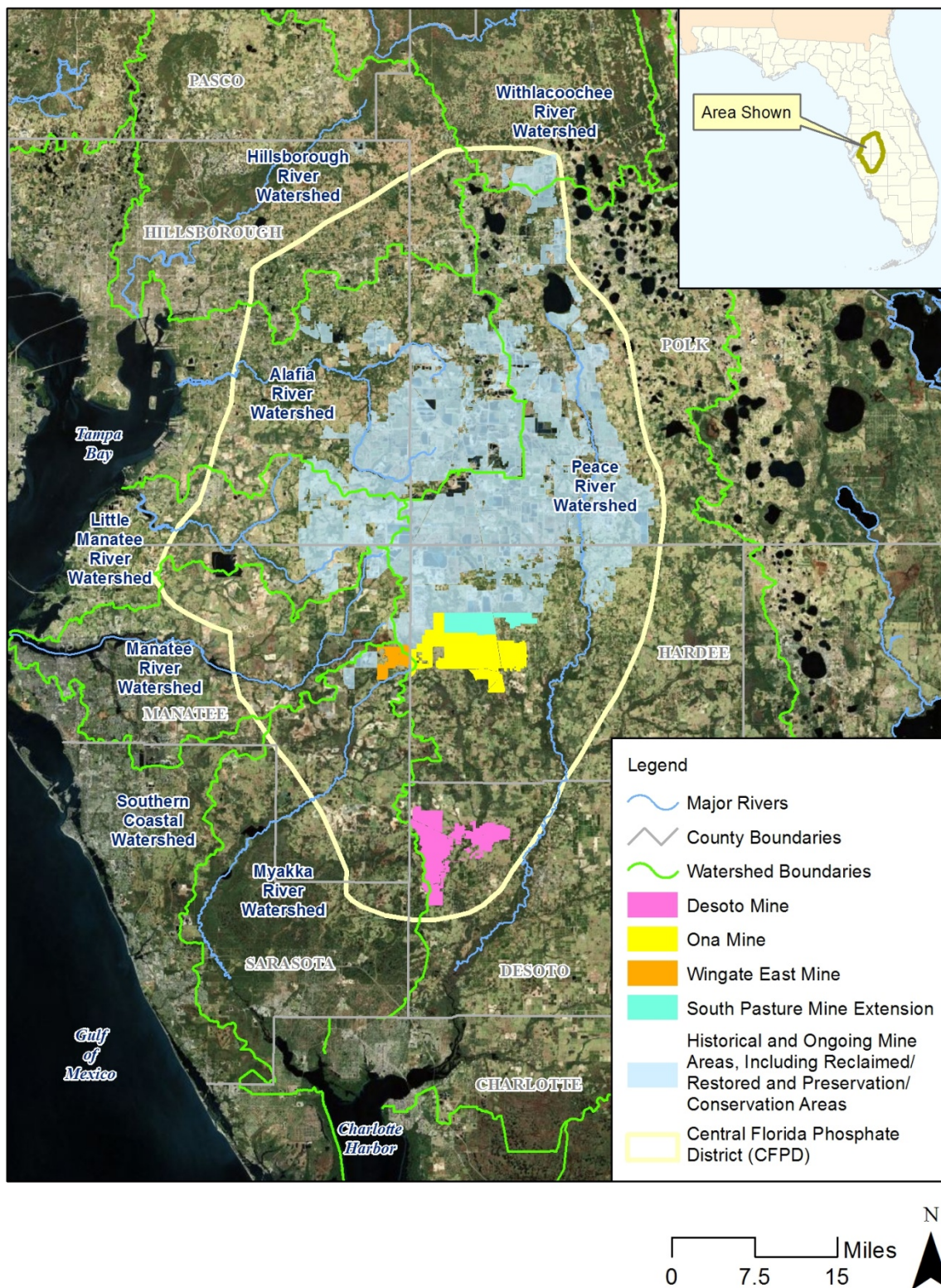
To guide its evaluation of the Applicants' Preferred Alternatives, not only for purposes of NEPA and this AEIS, but also for the USACE's evaluation of the associated applications for permits under Section 404 of the CWA pursuant to the Section 404(b) (1) Guidelines (40 CFR Part 230) and the public interest review, the purpose and need are stated in terms of the overall project purpose. The overall project purpose, independently defined as required by the USACE, forms the basis for the USACE's evaluation of reasonable alternatives under NEPA. Therefore, for this AEIS, the overall project purpose is to extract phosphate ore from the mineral reserves in the CFPD and to construct the associated infrastructure required to extract and process the phosphate ore at separation/beneficiation facilities, recognizing that the ore extracted must be within a practicable distance of a new or existing beneficiation plant.

## **1.3 SCOPE OF THE AEIS**

In defining the scope of analysis for the AEIS, the USACE considered the range of actions, alternatives, and impacts to be included in accordance with 40 CFR 1508.25.

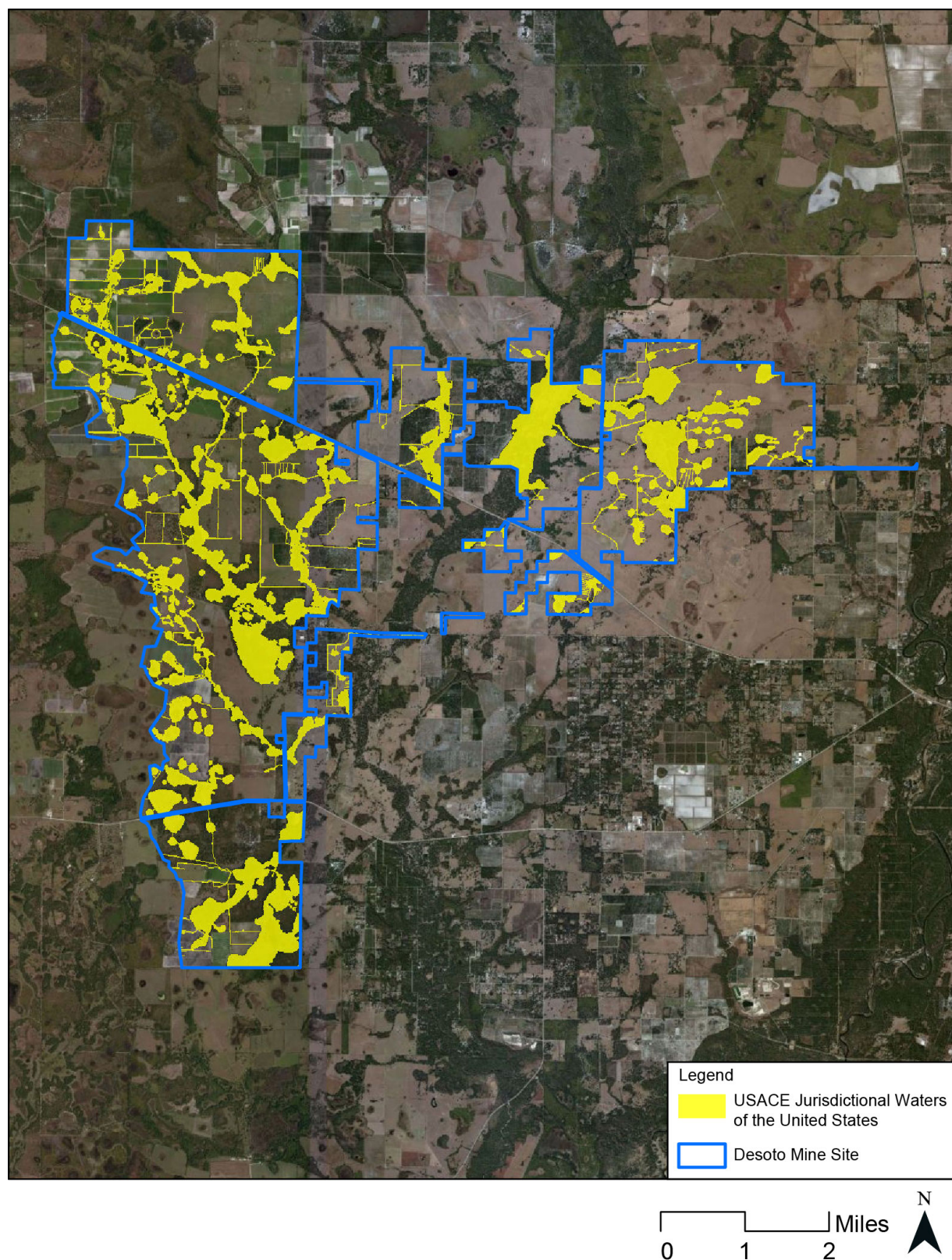
### **1.3.1 Proposed Action**

The USACE has received four applications for Department of the Army permits from CF Industries and Mosaic for proposed projects to expand existing mines and to create new phosphate mines, and to construct attendant facilities (Figure 1-4). The specific mine projects proposed by the Applicants, and the applicable USACE application file numbers, are summarized in the following paragraphs. The descriptions of the total extent of USACE jurisdictional wetlands and streams, and of the proposed impacts to USACE jurisdictional wetlands and streams, are based on the USACE's approved and proposed approved jurisdictional determinations. The proposed impacts reflect the Applicants' proposed projects as seen in the June 1, 2012, public notices for the four projects. These impact numbers may change during the USACE's further review of the four applications:

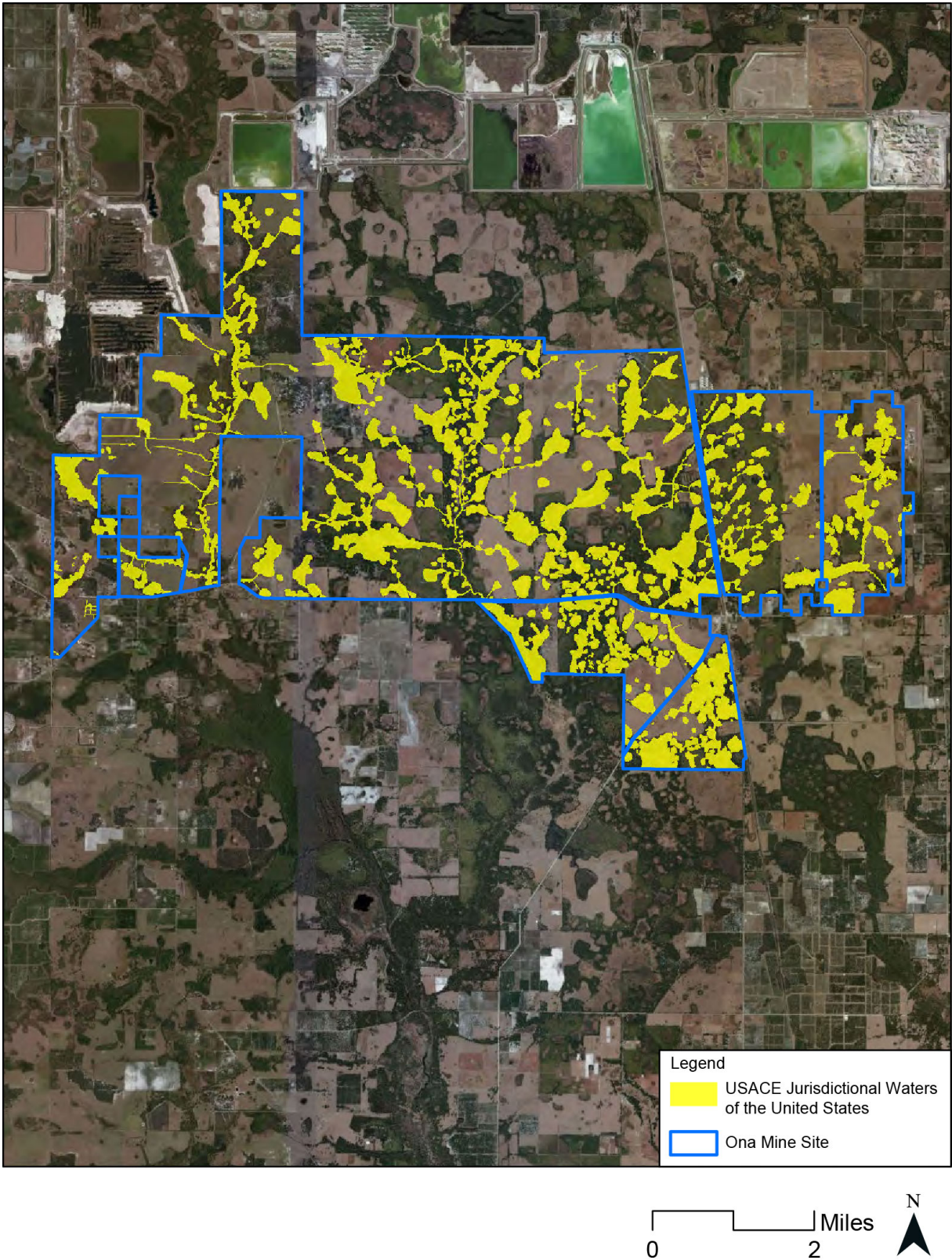


**Figure 1-4. Historical Mining Areas and Applicants' Preferred Alternatives in the CFPD**

- 1 • **Desoto Mine (Mosaic; SAJ-2011-01968) (Figure 1-5):** A new 18,287-acre dragline-based  
2 phosphate mine in northwestern DeSoto County in the Peace River watershed. The mine would have  
3 an estimated annual production rate of approximately 6.0 million short tons per year. This is  
4 considered to be 85 percent of the mining capacity. The operations plan calls for the Desoto Mine  
5 production to replace that of the existing South Fort Meade Mine (including the extension into Hardee  
6 County), with nominal overlap of operations depending on the exact mine-out date for the South Fort  
7 Meade Mine, exact startup of the Desoto Mine, and reclamation requirements at the existing mine.  
8 Table 1-3 provides projected dates, which may vary slightly due to mining rates and startup  
9 construction of the Desoto Mine. All of the lands in the proposed Desoto Mine are in the DeSoto  
10 County Mining Overlay area. Mining would be conducted over approximately 16 years, estimated to  
11 be from 2021 to 2037, with reclamation activities to continue for up to an additional 6 years. Overall,  
12 there are 4,034 acres of USACE jurisdictional wetlands and 128,639 linear feet of USACE  
13 jurisdictional streams on the site. The project as shown in the June 1, 2012, public notice would  
14 impact 3,253 acres of wetlands and approximately 64,474 linear feet of streams meeting the waters  
15 of the United States criteria.
- 16 • **Ona Mine (Mosaic; SAJ-2011-01869) (Figure 1-6):** A new 22,320-acre dragline-based phosphate mine  
17 in western Hardee County, mostly in the Peace River watershed with a small portion is in the Myakka  
18 River watershed. The mine would have an estimated annual production rate of approximately 6.0 million  
19 short tons per year. This is considered to be 85 percent of the mining capacity. The operations plan  
20 calls for phosphate rock production at the Ona Mine to replace that of the existing Four  
21 Corners/Lonesome Mine, with nominal overlap of operations depending on the exact mine-out date for  
22 the Four Corners/Lonesome Mine, exact startup of the Ona Mine, and reclamation requirements at the  
23 existing mine. Table 1-3 provides projected dates, which may vary slightly due to mining rates and  
24 startup construction of the Ona Mine. However, there would be some overlap for a period of time in the  
25 water circulation systems, CSAs, and use of the beneficiation plant. Four Corners/Lonesome, Wingate  
26 East, and Fort Green Southern Reserves mines CSAs and the water recirculation system may be used  
27 during the processing of the Ona Mine matrix. All of the lands in the proposed Ona Mine are in the  
28 Hardee County Mining Overlay area. Mining would be conducted over approximately 30 years, estimated  
29 to be from 2020 to 2050, with reclamation activities to continue for up to an additional 15 years. Overall,  
30 there are 5,389 acres of USACE jurisdictional wetlands and 208,366 linear feet of USACE  
31 jurisdictional streams on the site. The project as shown in the June 1, 2012, public notice would  
32 impact 4,615 acres of wetlands and approximately 136,731 linear feet of streams. meeting the waters of  
33 the United States criteria.



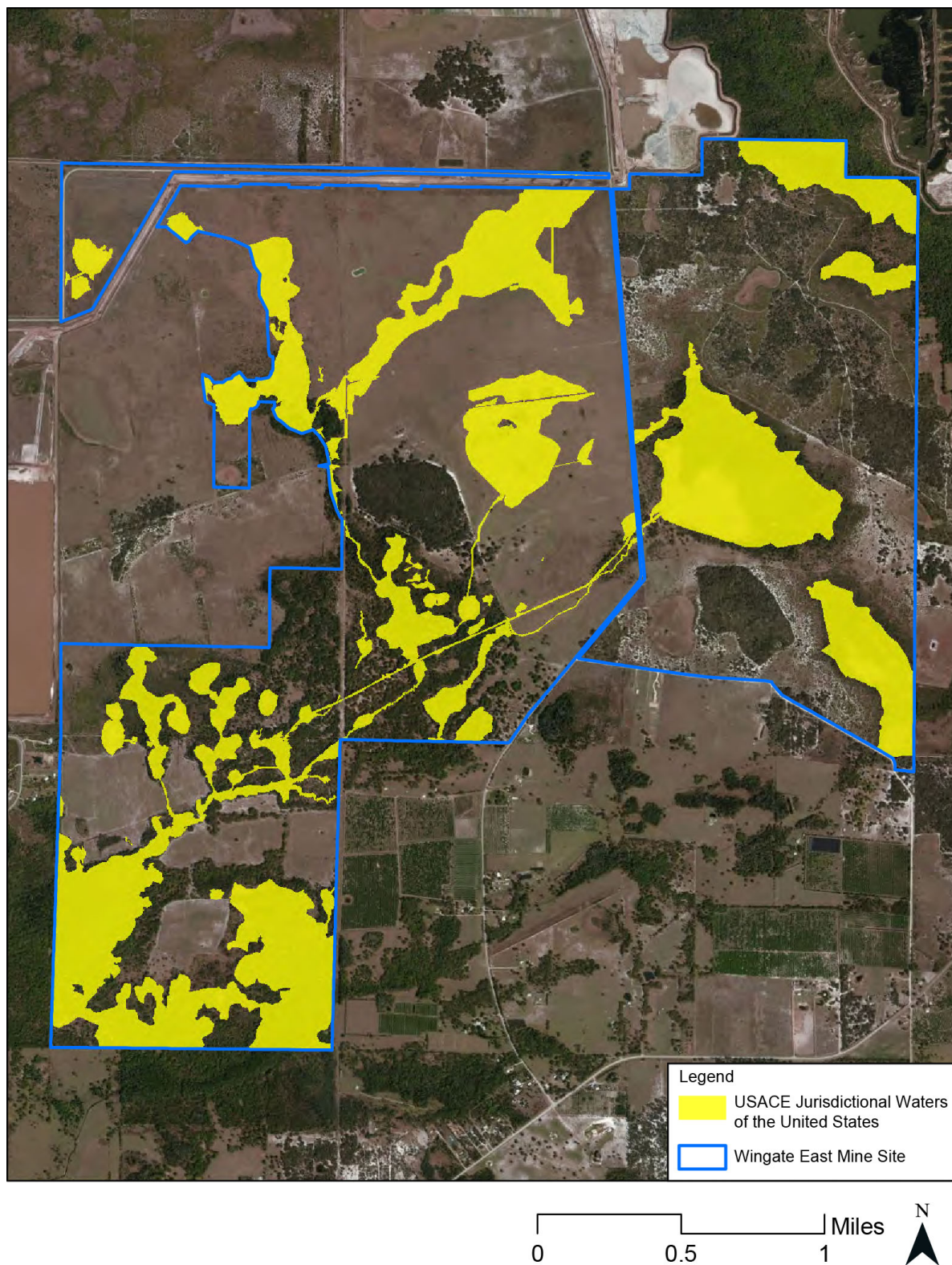
**Figure 1-5. USACE-Jurisdictional Wetlands and Streams on  
Mosaic's Desoto Mine Site**



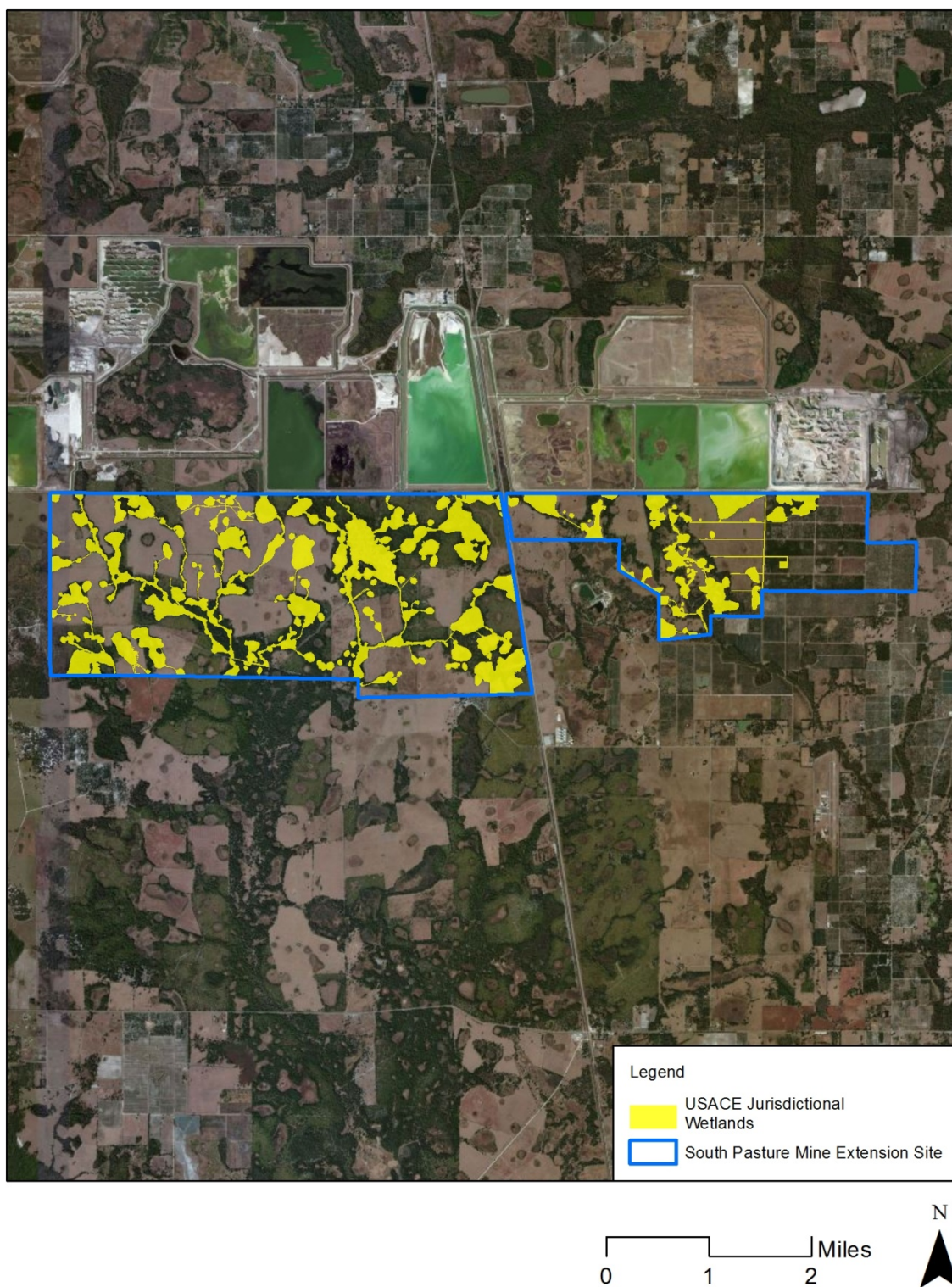
**Figure 1-6. USACE-Jurisdictional Wetlands and Streams on  
Mosaic's Ona Mine Site**

- 1 • **Wingate East Mine (Mosaic; SAJ-2009-03221) (Figure 1-7):** A 3,635-acre dredging and dragline-  
2 based extension of the existing permitted Wingate Creek Mine in eastern Manatee County, mostly in  
3 the Myakka River watershed with a small portion is in the Peace River watershed. The existing  
4 Wingate Creek Mine has an annual production rate of approximately 1.3 million short tons per year.  
5 This is considered to be 85 percent of the mining capacity. The operations plan calls for phosphate  
6 rock production at the Wingate East tract to extend the life of the existing Wingate Creek Mine, with  
7 no overlapping periods of operation. Mining would be conducted over approximately 27 years,  
8 estimated to be from 2019 to 2046, with reclamation activities to continue for up to an additional 8  
9 years. Overall, there are 940 acres of USACE jurisdictional wetlands and 68,138 linear feet of  
10 USACE jurisdictional streams on the site. The project as shown in the June 1, 2012, public notice  
11 would impact 784 acres of wetlands and approximately 27,287 linear feet of streams meeting the  
12 waters of the United States criteria.
- 13 • **South Pasture Mine Extension (CF Industries; SAJ-1993-01395) (Figure 1-8):** A 7,513-acre  
14 dragline-based extension of the existing permitted South Pasture Mine in Hardee County within the  
15 Peace River watershed. The existing South Pasture Mine has an annual production rate of  
16 approximately 3.5 million short tons per year. The operations plan calls for phosphate rock production at  
17 the South Pasture Extension to replace that of the South Pasture Mine, with relatively little overlapping  
18 periods of operation. All of the lands in the South Pasture Extension are in the Hardee County Mining  
19 Overlay area. Mining would be conducted over approximately 13 years, estimated to be from 2020 to  
20 2033, with reclamation activities to continue for up to an additional 10 years. Overall, there are  
21 1,699 acres of USACE jurisdictional wetlands and 92,809 linear feet of USACE jurisdictional streams  
22 on the site. The project as shown in the June 1, 2012, public notice would impact 1,218 acres of  
23 wetlands. Also, 32,161 linear feet of natural channel streams are proposed to be impacted.

24 The specific acres of wetlands and linear feet of streams proposed to be impacted are summarized in  
25 Table 1-5. Figures 1-5 through 1-8 illustrate the extent of USACE jurisdictional wetlands and streams on  
26 each project site.



**Figure 1-7. USACE-Jurisdictional Wetlands and Streams on Mosaic's Wingate East Mine Site**



**Figure 1-8. USACE-Jurisdictional Wetlands and Streams on  
CF Industries' South Pasture Mine Extension Site**

**Table 1-5. Summary of Proposed Impacts to USACE  
Jurisdictional Wetlands and Streams**

<b>Proposed Mine</b>	<b>Wetlands/Open Water Affected (acres)</b>	<b>Streams Affected (linear feet)</b>
Desoto	3,253	64,474
Ona	4,615	136,731
Wingate East	784	27,287
South Pasture Extension	1,218	32,161
<b>Total</b>	<b>9,870</b>	<b>260,653</b>
Source: USACE-approved Jurisdictional Determinations and proposed mine plans shown in June 1, 2012 public notices for the proposed Desoto, Ona, Wingate East, and South Pasture Extension mines.		

As noted previously, these projects involve a major federal action requiring permit authorization under Section 404 of the CWA (33 U.S.C. 1251 et seq.). The USACE Jacksonville District determined that the cumulative impacts of these proposed phosphate mining projects in the CFPD could significantly affect the quality of the human environment and that the proposed phosphate mining projects are similar in geographic coverage, the periods of proposed activity, alternatives, and impacts. These shared characteristics provide an additional basis for evaluating their environmental consequences in a single comprehensive AEIS.

For this AEIS, infill parcels are not considered to be similar actions to the Applicants' Preferred Alternatives, as they do not share common alternatives and timing with the proposed mines. They also do not rise to the level of significance of those actions, and propose much lower levels of impact. Mosaic, for example, has applied to mine two smaller parcels (G&D Farms and Lambe Tract) which are referred to as "infill" parcels. Infill parcels range in size from a few acres to hundreds of acres. These parcels are typically acquired and mined because of their proximity to an existing or planned future mine and beneficiation plant, and because of other factors, such as whether the mine owner can obtain the necessary property interest. The USACE will make project-specific determinations under NEPA and other applicable authorities on these actions, separately from the AEIS. The Applicants may propose other infill parcels that will be similar to these two proposals as they acquire additional mineral interests. However, these future projects are considered to be speculative at this time—the Applicants have not proposed mining in these areas and do not currently have the necessary property interest in them.

Further, the USACE has determined that the Applicants' four proposed phosphate mines have independent utility from the existing fertilizer plants and that the mining operations are single and complete projects. Phosphogypsum (calcium sulfate dihydrate) is a byproduct of the process that converts mined phosphate rock into the compounds used in fertilizers. The desired phosphorus content of the phosphate rock is in a form (calcium phosphate) that will not dissolve in water and so cannot be

“taken up” (and metabolized) by crops. The most common solution to the problem is converting the calcium phosphate to phosphoric acid. There are wet and dry processes for doing the conversion. Most U.S. production facilities, including those in the CFPD, use a “wet process” in which the prepared calcium phosphate rock is reacted with sulfuric acid to produce the phosphoric acid and phosphogypsum as a byproduct. Phosphoric acid is concentrated by evaporation and further processed into water soluble phosphate compounds so it can be taken up by crops. The production of each ton of phosphoric acid (as  $P_2O_5$ ) is accompanied by the production of approximately 5 tons of phosphogypsum.

The phosphogypsum, separated from the phosphoric acid, is in the form of a solid/water mixture (slurry), which is stored in open-air storage areas known as stacks or gypstacks. The stacks form as the slurry containing the by-product phosphogypsum is pumped onto a disposal site. Over time, the solids in the slurry build up and a stack forms. The CFPD stacks have generally been built on unused or mined-out land on the processing site.

As the stack grows, the phosphogypsum slurry begins to form a small pond (gypsum pond) on top of the stack. Workers dredge gypsum from the pond to build up the dike around it and the pond gradually becomes a reservoir for storing process water. The process water flows through ditches back to the facility.

In the CFPD, the surface area covered by individual stacks ranges from about 300 to 700 acres. The current height of these stacks varies, with maximums exceeding 300 feet. The total surface area covered by active phosphogypsum stack systems (ones that are still receiving phosphogypsum) in the CFPD is approximately 3,200 acres.

The tops of operating phosphogypsum stacks are covered by ponds and ditches containing process water. “Beaches” (saturated land masses) protrude into the ponds. These surface features may cover up to 75 percent of the top of the stack. Other surface features include areas of loose dry materials, access roads, and thinly crusted stack sides. The crust thickens and hardens when the stacks become inactive and no longer receive process slurry.

FDEP maintains a Phosphogypsum Management Program that regulates the design, construction, operation, and maintenance of phosphogypsum stack systems. It also addresses proper closure and long-term monitoring and maintenance of systems that have concluded useful production, or which are otherwise required by rule to be closed. The program also administers financial responsibility requirements designed to make sure that owners/operators have the financial ability to properly close and manage the stacks.

Mosaic and CF Industries have stated that the mineral processing plants (fertilizer/food-grade phosphate production facilities) conceptually would be able to continue operations independently of the proposed mines because the mineral processing plants are not necessarily dependent on the mines. The practicability of importing phosphate rock to these plants is discussed in Chapter 2. The 1997 PCS Phosphate Final EIS included an economic analysis; it found that, depending on phosphate rock

economics, PCS could continue to operate its fertilizer/food-grade phosphate production facilities by purchasing phosphate rock from other sources or could operate the mines and ship the beneficiated phosphate ore to other areas, including areas outside of Florida. As an example, several facilities in Florida and the gulf states currently process imported phosphate rock (USGS, 2003). Two companies –; Mississippi Phosphates Corp., Pascagoula, MS and PCS Nitrogen, Inc., Geismar, LA – manufactured wet-process phosphoric acid using imported phosphate rock from Morocco (USGS, 2005).

Therefore, fertilizer plants and the associated phosphogypsum stacks are not within the scope of the proposed action and are not considered to be a component of the direct and indirect effects of the four proposed mines. Although they are not included as part of the proposed action, they are included in the scope of the cumulative impact analysis, discussed below under scope of impact.

### **1.3.2 Scope of Analysis**

In addition to the Applicants' Preferred Alternatives outlined above, four alternative mine sites and the No Action Alternative were identified as described in Chapter 2. Furthermore, mitigation alternatives have been described in Chapter 5.

### **1.3.3 Scope of Impacts**

Chapter 4 describes the significant direct, indirect, and cumulative impacts that would be expected to occur as a result of implementing the Applicants' Preferred Alternatives, four alternative mine sites, and the No Action Alternative as described in Chapter 2. The temporal and geographic scope of analysis varies with the resource impacted and is described in Chapter 4. For the cumulative impacts analysis, USACE has determined that two of the four alternative mine areas should be identified as potential future mining sites—the Pine Level/Keys and Pioneer Tracts (which for the AEIS includes the area shown on many maps as "West Pioneer"). Mosaic has identified these areas as proposed future mines, and requested a jurisdictional determination for a portion of the Pine Level/Keys Tract site. In addition, the Pioneer Tract shares a boundary with the Ona Mine site to the north, the Pine Level/Keys Tract shares a boundary with the Desoto Mine site to the east, and both would be in the vicinity of those mines' beneficiation plants. The locations of these two potential future mines are shown in Figure 1-9. Because the Pine Level/Keys and Pioneer Tracts are reasonably foreseeable, they have been included in the cumulative impacts analysis described in Chapter 4.

Furthermore, the potential cumulative impacts of the two currently proposed infill parcels (G&D Farms and Lambe Tract) are considered as part of the cumulative effects analysis in Chapter 4. Finally, this Final AEIS took into account the impacts of phosphogypsum stacks – as it does other past, present, and reasonably foreseeable actions in addition to the proposed actions – in determining cumulative impacts of the proposed action and other reasonably foreseeable actions.

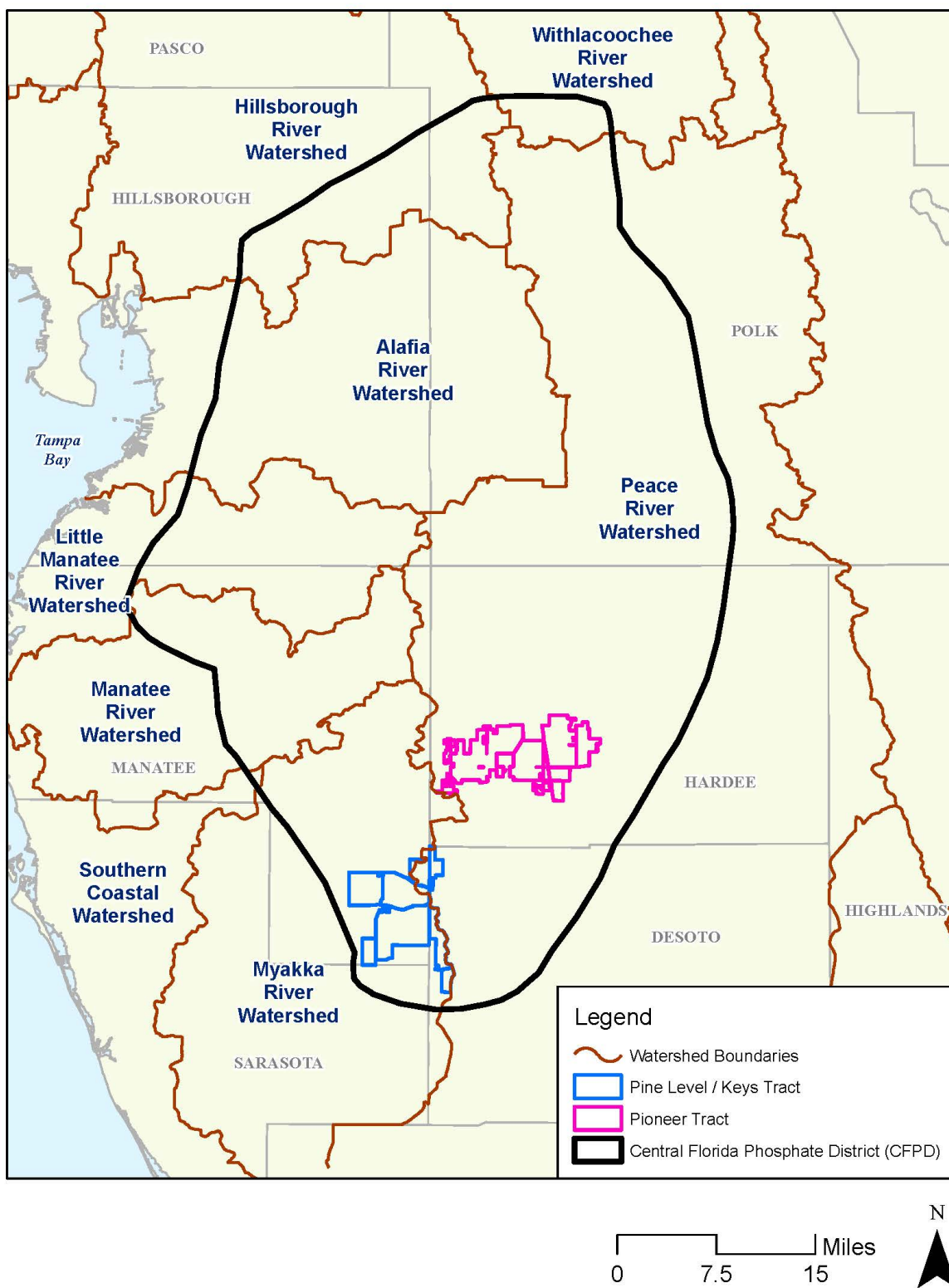


Figure 1-9. Locations of Two Offsite Alternatives

## **1.4 AGENCY GOAL OR OBJECTIVE FOR THIS AEIS**

The objectives of this AEIS for phosphate mining in the CFPD are to:

- Analyze the direct, indirect, and cumulative impacts/effects associated with the four similar permit applications for mining of phosphate in the CFPD, including those indirect and cumulative impacts that extend to areas outside of the CFPD.
- Describe and assess alternatives (e.g., a No Action Alternative and other reasonable alternatives) to the four similar proposed mining and related activities (i.e., the Applicants' Preferred Alternatives) in the CFPD for which CWA authorization is sought.

The over-arching goal of this AEIS is to inform agencies, other stakeholders, and the public of the impacts of, and alternatives to, the four similar permit applications for phosphate mines. The AEIS will support regulatory decisions to be made by the USACE and other agencies regarding the four specific proposed mine projects. A secondary function is to inform USACE regulatory decisions regarding future phosphate mining permit applications.

This AEIS is not a programmatic environmental impact statement (PEIS). Consistent with NEPA, a PEIS typically is used to evaluate the environmental impacts of broad federal agency actions such as the adoption of new or revised agency program guidance, policies, or regulations, or the setting of national policies. Comparatively, as stated by the Council on Environmental Quality (CEQ), "the preparation of an area-wide or overview EIS may be particularly useful when similar actions, viewed with other reasonably foreseeable or proposed agency actions, share common timing or geography. For example, when a variety of energy projects may be located in a single watershed, or when a series of new energy technologies may be developed through federal funding, the overview or area-wide EIS would serve as a valuable and necessary analysis of the affected environment and the potential cumulative impacts of the reasonably foreseeable actions under that program or within that geographical area."

## **1.5 PERMIT ACTIONS REQUIRED**

The Applicants' proposed actions require the discharge of dredged or fill material into waters of the United States regulated under the CWA. The proposed actions are being reviewed by the USACE and the USEPA pursuant to the Memorandum of Agreement between the Department of the Army and the USEPA Concerning the Determination of the Section 404 Program and the Application of the Exemptions under Section 404(F) of the CWA, dated January 1989 (USACE and USEPA, 1989) for authorization pursuant to the CWA.

Other authorizations that may be required by state and local levels of government may include: a Water Quality Certification issued pursuant to Section 401 of the CWA through the FDEP Mining and Minerals Regulation Program; a Coastal Zone Management Act consistency determination under Section 307,

issued by FDEP; an Industrial Wastewater Facility Permit (National Pollutant Discharge Elimination System [NPDES] permit) issued by the FDEP; an Environmental Resource Permit (ERP) from FDEP (2012a); and a Conceptual Reclamation Plan, issued by the FDEP (2011a). A Water Use Permit will be required by SWFWMD; a Zoning and Land Use Permit issued by the appropriate county; county-specific requirements such as those required by the Hardee County Mining Overlay Comprehensive Plan amendments, and a Master Mining and Reclamation Plan also issued by the appropriate county. Additional detail on requirements associated with some of these regulations is provided in Chapter 5, which discusses mitigation of impacts.

## **1.6 DECISIONS TO BE MADE**

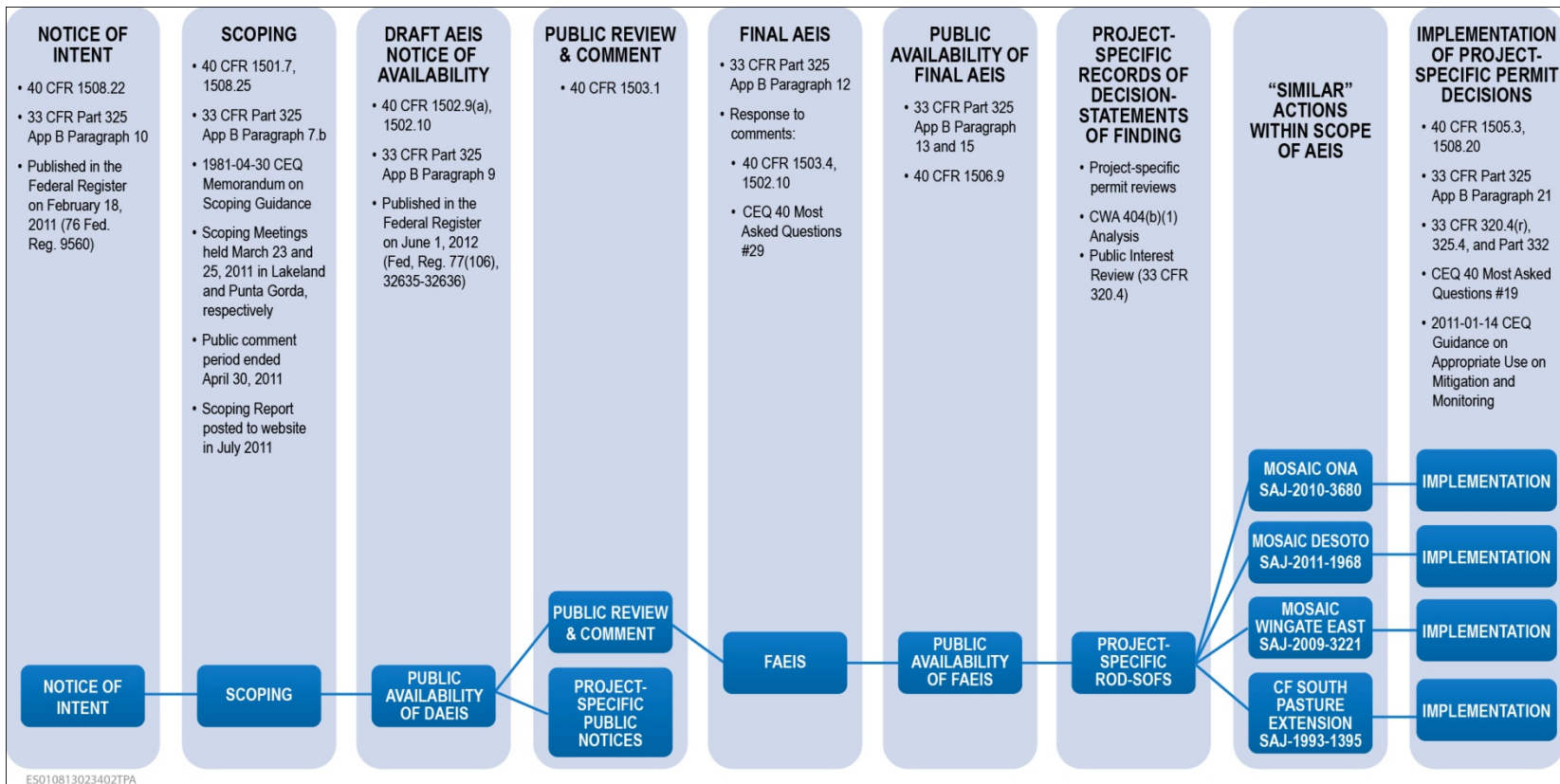
The information compiled in this AEIS will be used by the USACE to determine whether to issue, issue with modifications or conditions, or deny Section 404 CWA permits for the four similar permit applications. The Applicants' proposed actions could impact approximately 10,000 acres of waters of the United States, including wetlands, through filling, land clearing, and other activities associated with phosphate mining operations if all pending applications were approved.

The alternatives under consideration are discussed in detail in Chapter 2. These include the No Action Alternative (no USACE permits issued for the proposed projects), the Applicants' Preferred Alternatives, various alternatives other than the Applicants' proposed mine locations, and several alternatives that avoid, minimize, and mitigate the impacts of the proposed projects.

This document constitutes the project-specific NEPA analysis for the four similar permit applications. As indicated in the scoping process and the Draft AEIS, USACE will conduct the public interest reviews and CWA Section 404(b)(1) analyses for the four similar permit applications in the project-specific records of decision-statements of findings (RODSOF) as depicted in Figure 1-10. The USACE is committed to coordination with USEPA, FDEP, the Applicants, participating agencies, and other stakeholders on the project-specific CWA Section 404(b)(1) analyses and public interest reviews.

## **1.7 RELATED ENVIRONMENTAL DOCUMENTS**

A number of precedent NEPA documents and other regional planning studies contain information useful to this AEIS. Brief summaries of some of the most relevant environmental documents are provided in the following paragraphs. These documents have helped to inform the USACE as it developed this AEIS on phosphate mining in the CFPD.



Note: This figure is intended for reference only and is not an exhaustive list of all relevant law, regulation, and guidance.

Figure 1-10. The Relationship between the NEPA and the Permit Decision-Making Processes

**1.7.1 Central Florida Phosphate Industry Final EISs, Volumes 1, 2, and 3 (USEPA, 1978a; USEPA, 1978b; USEPA, 1978c)**

The USEPA prepared an AEIS to analyze the cumulative, interrelated impacts of the current and proposed phosphate development in central Florida. This document reviewed new and existing sources of phosphate mining in central Florida, with a focus on the impacts to the natural resources (atmosphere, land, water, and radiation) and manmade environment (demographics, economics, and land use). The AEIS considered available measures for minimizing and mitigating unavoidable impacts of mining operations in the region. There also was an extensive review of various alternatives including No Action, modifications to reduce water usage, and avoid any mining activities in waters of the United States.

**1.7.2 2007 FDEP and SWFWMD Peace River Cumulative Impact Study (PBS&J, 2007)**

The Florida Legislature enacted Senate Bill 18-E in 2003 to direct the FDEP to conduct a Cumulative Impact Study (CIS), followed by a management plan to evaluate alterations of the Peace River watershed that had occurred through anthropogenic and natural stressors on stream flow, ambient water quality, and certain ecological indicators. The stressors evaluated in the study included urban development, phosphate mining, agriculture, and natural climate variability. Specific evaluations reviewed historical changes in acres of wetlands, stream bed, and native habitat lost; and changes in rainfall, stream flows, groundwater elevations, concentrations of certain water quality constituents, and fish communities. The document evaluated the relative and absolute contribution of each of the four stressors to these historical changes, where possible. A management plan prepared by the FDEP identified potential regulatory and non-regulatory measures that could be applied to minimize future impacts and mitigate past impacts to the watersheds. The study also identified benefits and implications of establishing buffer areas in the 100-year floodplain of major surface waters in the basin.

**1.7.3 Peace River Basin Resource Management Plan (FDEP, 2007a)**

Following the completion of the Peace River CIS, Chapter 2003-423, Laws of Florida, charged FDEP (assisted by SWFWMD and stakeholder groups) to prepare a Resource Management Plan for the Peace River basin to describe the key characteristics of the basin, summarize major impacts and their causes to water resources in the area, describe existing management programs, and recommend actions to avoid, minimize, and/or mitigate cumulative impacts to the basin. The plan identified 22 impacts ranging from obvious impacts to subtle changes. Impacts were defined largely as associated with agriculture, phosphate mining, urbanization, and climate. The major recommendations provided by the plan were to expand critical existing programs affecting aquifer recovery strategies and setting minimum flows and significant multi-agency policy shifts that might affect land acquisitions and funding, joint agency permitting reviews and criteria, and other actions to streamline mining authorization while enhancing environmental protection and restoration.

**1.7.4 Estech General Chemical Corporation Duette Mine, Manatee County Draft EIS (USEPA, 1979)**

This EIS was prepared in response to a proposal by Estech General Chemical Corporation to construct a phosphate mine, beneficiation plant, and rock drying facility in Manatee County, Florida. The proposed mine encompassed 10,394 acres with approximately 6,600 acres confirmed to be minable. The EIS considered several alternatives to minimize loss of phosphate resources, water pumping, ore and water transportation, road and utility construction, and loss of environmentally-sensitive areas. Six alternative locations were considered. Alternative production rates were evaluated to assess the environmental effects (including loss of habitat, rate of groundwater withdrawal, and level of air emissions), economic effects (relative to production costs, rock demand and growth, and the company's production and marketing approach) of each alternative. Other alternatives considered the impacts to environmental resources relative to mineral recovery, mining methods (including draglines, dredges, bucket wheel excavators, and combinations of these methods); ore transportation alternatives (including conventional pumping and trucks); beneficiation alternative technologies; water supply alternatives (including the Floridan aquifer as well as rainfall catchment and the surficial aquifer); water disposal and reclamation plan alternatives for sand and clay wastes; surface water discharge alternatives relative to volume and point of discharge; rock drying alternatives; energy source alternatives (including possible onsite generation); and the No Action Alternative.

**1.7.5 Mississippi Chemical Corporation, Hardee County Phosphate Mine, Hardee County Draft EIS (USEPA, 1981a; USEPA, 1981b)**

This EIS was prepared in response to a proposal by Mississippi Chemical Corporation to construct and operate a phosphate mine, beneficiation plant, and rock drying facility in west-central Hardee County near Ona, Florida. The proposed mine was to encompass 14,850 acres, of which approximately 9,000 acres were proposed for mining. The EIS evaluated a number of alternatives, in addition to No Action. These alternatives included locations of the beneficiation plant; mining methods including dragline, dredge, and bucket wheel; methods for matrix transport, including pipeline, conveyor belt, and truck; methods for matrix processing; sources of process water; locations of effluent disposal; options for rock drying; methods for waste disposal and reclamation; wetlands preservation considerations; and product transport.

**1.7.6 Farmland Industries, Inc. Phosphate Mine, Hardee County, Florida Final EIS (USEPA, 1981c)**

Farmland Industries, Inc., proposed an open pit phosphate mine and beneficiation plant on a 7,810-acre site in west-central Hardee County, Florida. Mining and processing would have involved 5,280 acres, all of which were to be reclaimed. The EIS examined alternatives, impacts and mitigation measures related to air, geology, radiation, groundwater, surface water, ecology, and other natural and cultural systems.

### **1.7.7 Phosphate Rock Plants – Background Information for Promulgated Standards (USEPA, 1982a)**

The USEPA proposed promulgation of new standards for phosphate rock plants, thereby requiring an EIS to support the process and decision made and evaluate the environmental and economic impact of the proposed standards. The EIS evaluated impacts related to standards of performance affecting air impacts from emissions; solid asset impacts; impacts to current energy usage and options for more stringent controls; impacts related to water use and radiation; and resource and trade-off analyses. Alternatives included continued use of the State Implementation Plans (SIPs), establishing new levels of controls for new sources, and delaying the establishment of environmental standards. A key component of the EIS was the evaluation of the proposed standards for economic impacts within all aspects of the phosphate industry, and cost analysis for each component of the facility that might be affected.

### **1.7.8 Mobil Chemical Company South Fort Meade Mine, Polk County, Florida Final EIS (USEPA, 1982b)**

Mobil Chemical Company proposed an open pit phosphate mine, beneficiation plant, and transshipment facility on a 16,288-acre site in southern Polk County, Florida. Mining would involve 15,194 acres, all of which would be reclaimed. This EIS examined alternatives, impacts, and mitigation measures related to air, geology, radiation, groundwater, ecology, and other natural and cultural systems.

### **1.7.9 CF Mining Corporation Final EIS for New Source NPDES Permit (USEPA, 1989)**

This EIS was prepared to evaluate the effect of issuing a new source NPDES permit to CF Mining Corporation, Hardee Phosphate Complex II, Hardee County, Florida.

## **1.8 PUBLIC INVOLVEMENT**

One of the basic tenets of NEPA is that comprehensive information be made available to the public and agency officials before decisions are made and actions are taken. In addition, NEPA gives all persons, organizations, and government agencies the right to comment on proposed federal actions that are evaluated by an EIS. To provide the public with the comprehensive information it needs to comment, the early identification of issues and potential impacts is critical to efficient, effective EIS preparation. To obtain public input for this AEIS and to ensure that the information provided in the AEIS was comprehensive, the USACE sought input early in the process as required by NEPA, and throughout the development of this document. The opportunities for public input available during the AEIS development are summarized in the following paragraphs.

### **1.8.1 Public Involvement in Advance of the Scoping Process**

On October 6 and 7, 2010, the USACE hosted a Phosphate Mining Workshop in Lakeland, Florida, to allow the public to provide input on key issues relating to phosphate mining in the CFPD. The workshop

consisted of a day-long session, an evening session, and an after-action review the following day. More than 100 people from widely divergent backgrounds attended the day-long session and many issues were explored through 10-minute presentations. Presenters included: USEPA, FDEP, USGS, Mosaic, CF Industries, the Sierra Club, the FIPR Institute FIPR, the International Plant Nutrition Institute, the Port of Tampa, and adjacent landowners. Approximately 170 people attended the evening meeting which consisted of facilitated breakout sessions designed to meet the USACE goal of receiving public comments. The results of the breakout sessions were immediately reported to all attendees.

The participants in the workshop defined ways that phosphate mining affected them, and then ranked those issues. This input was then used in the development of the categories used during the formal scoping process. Approximately 120 people attended the after-action review, which was held in an open forum to allow the participants to attend. According to feedback received from attendees, the workshop provided valuable information to the public and met the goal of allowing public input.

### **1.8.2 Notice of Intent**

Federal regulations require that as soon as is practicable after a decision is made to prepare an EIS or AEIS, the scoping process for the draft EIS or AEIS must be announced in a Notice of Intent (NOI). An NOI to prepare this AEIS was published in the *Federal Register* on February 18, 2011 (76 Fed. Reg. 9560). The NOI was widely distributed and advised the public of the project background, the project purpose, alternatives that were under consideration in this AEIS, and major issues associated with the Applicants' Preferred Alternatives. The NOI also advised the public of the scoping process and invited all parties to participate in that process by identifying any additional concerns, studies needed, alternatives, procedures, and other matters related to the scope of the AEIS.

### **1.8.3 Scoping and Issues**

In 40 CFR Part 1501.7, CEQ regulations require "... an early and open process for determining the scope of issues to be addressed and for identifying significant issues related to the proposed action." This is known as the "scoping process," which must occur before an EIS is prepared. To ensure that interested parties are heard and that there is open communication, the USACE holds public scoping meetings. The USACE uses scoping to ensure that the EIS addresses the concerns of both the public and other governmental agencies.

The scoping period was February 18, 2011, through April 30, 2011. Two public scoping meetings were held: one on March 23, 2011, at The Lakeland Center in Lakeland, Florida, and one on March 25, 2011, at the Charlotte Harbor Event Center in Punta Gorda, Florida. Comments received during the scoping period included oral comments provided at the scoping meeting and written comments provided to the USACE at the scoping meeting or after the meeting. The USACE received more than 5,000 comments

from more than 3,000 interested parties and individuals during the scoping period. The comments received during the scoping period organized by issue topics are summarized as follows:

- Surface Water Hydrology: Comments submitted were primarily related to the past, current, or future conditions of the movement, distribution, and/or quality of surface waters in the vicinity of mining operations, as well as in onsite receiving waters and downstream waters.
- Groundwater Resources: The comments in this category were focused on potential impacts from mining activities to drinking water wells, the Floridan Aquifer, and the Peace River watershed; USGS survey methodologies; groundwater recycling; well pumping; and the Aquifer Recharge and Recovery project by CF Industries.
- Water Supply and Conservation: The comments in this category were related to the volume of water required for phosphate mining operations; comments expressed concern about potential adverse impacts from water supply withdrawals from the groundwater.
- Water Quality: Comments were received supporting the measures taken by the mining industry to preserve water quality, and current and long-term effects on Florida's water quality from phosphate industry operations.
- Wetlands: Comments were received in this category about the steps taken by the industry to preserve wetlands, the condition of reclaimed wetlands after mining is finished, and mining impacts to wetlands in need of preservation.
- Wetland Functions and Value, and Mitigation of Losses: Comments received suggested both that the reclaimed mine lands offer greater wetland quality and wildlife diversity than before the mining occurred, and that mining impacts result in the loss of functioning wetlands in the CFPD.
- Aquatic Invertebrate Communities: These comments pertained to ecological characteristics of water resources and the aquatic communities associated with them in pre- and post-mining areas.
- Fish and Wildlife Habitats: The comments under this category addressed fish and wildlife habitats before and after mining activities.
- Federally Listed Threatened and Endangered Species: Comments were submitted about the phosphate industry's efforts to minimize impacts to threatened and endangered (T&E) species, the industry's use of incidental take permits during mining, and potential cumulative mining effects on estuarine habitats used by the smalltooth sawfish.
- Mine Reclamation: The comments in this category were related to the success, or lack of success, of reclamation, including the hydrology of reclaimed lands.

- 1 • Land Use: Comments submitted under this category focused on the uses of reclaimed lands including  
2 public recreation, agriculture, and natural areas, and the length of time required for mining and  
3 reclamation.
- 4 • Historic Properties: Comments were received highlighting the historical significance of mining  
5 operations in central Florida. The need to protect historic properties and structures from mining  
6 impacts was indicated.
- 7 • Cultural Resources: Comments received were similar to those pertaining to historic properties.
- 8 • Aesthetics: Comments were received from individuals stating satisfaction with the condition of  
9 reclaimed lands.
- 10 • Socioeconomics: Comments in this category were related to the positive economic impact that the  
11 phosphate industry has had on families, the charitable actions and community works of the  
12 phosphate industry, the potential for dependency on foreign sources of phosphate, food costs,  
13 negative economic impacts associated with management of pollution from mining, and jobs.
- 14 • Public Health and Safety: Health and safety concerns for the public and environment were submitted  
15 by concerned stakeholders, along with comments stating that the phosphate mining industry has a  
16 good safety record.
- 17 • Transportation: Comments were received on the potential loss of jobs for drivers who operate delivery  
18 and supply trucks, and other support services, rail and local road infrastructure, and the benefit to the  
19 Port of Tampa from the phosphate industry.
- 20 • Recreation: Comments were submitted about recreation areas on reclaimed lands as well as areas  
21 used for recreation purposes downstream from phosphate mining operations.
- 22 • Energy Needs: Comments submitted under the energy needs category indicated that the indirect  
23 benefits of phosphate mining include fertilizer production, which supports improved crop production,  
24 and the waste heat to energy initiative of the fertilizer manufacturing industry.
- 25 • Mineral Needs: Comments submitted under this category indicated that mining in Florida was  
26 important because it provides the necessary fertilizers for crop production around the world.
- 27 • Consideration of Property Ownership: Comments were offered that mining companies should be  
28 allowed to proceed with mining activities on land they own, as long as the mines operate within all  
29 permit requirements.

- Agriculture: Comments were received that the U.S. agricultural industry would be adversely impacted if phosphate and/or fertilizer became an import from foreign nations.
- Urbanization/Land Development: Comments in this category were generally associated with how phosphate mining and reclaimed lands are ultimately used.
- Cumulative Effects: Comments were received about multiple areas where the potential for cumulative or indirect effects of phosphate mining were a concern.

Detailed summaries of the comments raised during the scoping meetings are included in the scoping report available on the AEIS project web site (<http://www.phosphateaeis.org>). Through review and consideration of the interests expressed by these comments, the Draft AEIS identified significant impacts and alternatives to the proposed projects, and set the foundation for evaluating the four specific applications under current USACE review, as well as for Section 404 permit applications for other phosphate mining projects in the CFPD which might be received in the future.

#### **1.8.4 Project Website**

On February 24, 2011, the AEIS project website was launched at [www.phosphateaeis.org](http://www.phosphateaeis.org). The website has been used to provide the public with information about the process and status of the AEIS review. This information includes project updates, a project overview, a project schedule including opportunities for public input in accordance with NEPA, documents including presentation materials and reports, links to provide access to the USACE, NEPA/CEQ, EPA, FDEP, and SWFWMD websites, and contact information for the USACE project manager and the third-party contractor.

#### **1.8.5 Agency Coordination**

A broad range of local, state, and federal agencies have participated in the preparation of the AEIS, with the USACE serving as the lead agency and the USEPA and the FDEP serving as cooperating agencies. Participating agencies included, but were not necessarily limited to the following entities: Charlotte County, DeSoto County, Hardee County, Hillsborough County, Lee County, Manatee County, Polk County, Sarasota County, City of North Port, City of Winter Haven, Central Florida Regional Planning Council, Southwest Florida Regional Planning Council, CHNEP, SWFWMD, Peace River/Manasota Regional Water Supply Authority (PRMRWSA), Florida Department of Transportation (FDOT), Florida Fish and Wildlife Conservation Commission (FFWCC), Florida Department of Agriculture and Consumer Services (FDACS), U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), U.S. Fish and Wildlife Service (USFWS), USGS, and the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS). In addition to seeking input from these agencies, the USACE also invited Native American Tribal Nations, interested non-governmental organizations (NGOs), and other stakeholders to participate in the public scoping process and in the

review of the Draft AEIS. This Final AEIS will also be available for public and agency review and comment. As noted previously, a website (<http://www.phosphateaeis.org>) has also been available throughout the study; it includes an overview of the NEPA process, updates on schedule, and a number of documents, including presentations and the Draft AEIS.

The USACE has maintained a transparent approach throughout the process that has included, in addition to public meetings, reaching out to the participating agencies through periodic briefings and phone or email communications on specific technical topics. Two of these briefings were web-based and were held on January 26 and April 26, 2012. During the January briefing, the USACE described the progress of the AEIS, with specific focus on the Purpose and Need and Alternatives Identification sections, and provided a revised schedule of key milestones, including the planned release of the Draft AEIS for public review. The April briefing focused on the Draft AEIS outline, content, and schedule. The agency briefing slides and an audio recording of the USACE presentations and the subsequent question and answer sessions were posted on the project website for agency and public access.

#### **1.8.6 Charlotte Harbor NEP Newsletter Updates**

For the duration of the Draft AEIS preparation period, the CHNEP has supported public information distribution regarding the AEIS through its quarterly newsletter, *Harbor Happenings*. The newsletter has included information about and updates on the status of the Draft AEIS since the winter 2011 issue. CHNEP has indicated a very broad readership of its newsletter; it routinely mails out approximately 11,000 copies. Information on how to obtain the newsletter is available from the CHNEP. CHNEP also distributes copies at locations such as nature centers and libraries, and at various events in the CHNEP's study area boundaries.

#### **1.8.7 Notice of Availability**

The Notice of Availability of the Draft AEIS was published in the Federal Register on June 1, 2012 (Fed. Reg. 77(106), 32635-32636) as EIS No. 20120165, with the comment period to end on July 16, 2012. Following requests from a number of stakeholders, this comment period was extended from 45 days to 60 days; i.e., to July 30, 2012.

#### **1.8.8 Public Involvement Following Publication of the Draft AEIS**

After publication of the Draft AEIS, the USACE held two public meetings on June 19 and 21, 2012, to obtain comments. As noted previously, the public had a 60-day period (extended from 45 days) to provide comments on the Draft AEIS, and these comments have been used to update and revise the Final AEIS.

#### **1.8.9 Public Comments**

Table 1-6 summarizes the methods by which comments were submitted on the Draft AEIS and the total number of comments received by each method. Of the 2,551 submittals, approximately 277 (11 percent)

1 were form letters or postcards from CF Industries supporters and 2,166 (85 percent) were form letters or  
 2 postcards from Mosaic supporters.

<b>Table 1-6. Comment Submissions Received on the Draft AEIS as of September 5, 2012</b>		
<b>Method of Comment Submittal</b>	<b>Count</b>	<b>Percent of Total</b>
CommentWorks Web Form	18	Less than 1%
E-Mail	66	3%
Mail	21	Less than 1% 96%
Form Letters / Postcards via Mail	2,443	
Public Meeting transcripts	3	Less than 1%
<b>Total</b>	<b>2,551</b>	

#### 1.8.9.1 Summary of Comments Received on the Draft AEIS

A total of 2,551 submissions on the Draft AEIS were received, with a total of 4,110 individual comments. These comments and responses are provided in Appendix A of this Final AEIS. After accounting for the form letters submitted in support of the Applicants' projects, the remaining 108 submissions, 4 to 5 percent of the total, came from a broad range of stakeholders (Table 1-7). There were 44 private citizens who submitted comments on the Draft AEIS, as well as 10 county government officials from 8 counties and 3 officials from 2 municipalities. Five federal and six state agency submittals were received. Submittals also were received from 8 non-profit organizations and 11 individuals from 8 environmental organizations. In addition to the form letters submitted by the Applicants' constituents, CF Industries provided 345 individual comments on the Draft AEIS, while Mosaic provided 239 individual comments. There was a total of 1,667 individual comments, not counting the form letter submittals.

<b>Table 1-7. Draft AEIS Commenter Category</b>	
<b>Commenter Category</b>	<b>Count of Commenter Type</b>
<b>Academia</b>	<b>2</b>
Florida Gulf Coast University	
Florida Industrial and Phosphate Research Institute	
<b>County / Municipal Government</b>	<b>10</b>
Charlotte County Board of County Commissioners (BoCC)	
Polk County BoCC	
DeSoto County Administration	
Hardee County Mining Department	
Lee County	
Manatee County	
Polk County	
City of North Port	
City of Punta Gorda	
Sarasota County	
<b>Elected Official</b>	<b>2</b>
Florida House of Representatives, District 66	
<b>Environmental Organization</b>	<b>8</b>
3PR (People for Protecting Peace River, Inc.)	
Audubon Florida	
EcoSwift	
ManaSota – 88	
Protect Our Watersheds, Inc.	
Lemon Bay Conservancy	
Sanibel-Captiva Conservation Foundation Marine Lab	
Sierra Club Florida	
<b>Federal Agency</b>	<b>7</b>
Charlotte Harbor National Estuary Program	
NOAA NMFS	
US Department of the Interior, USFWS	
USEPA	
USGS	
<b>Non-profit Organization</b>	<b>7</b>
American Farm Bureau Federation	
Florida Chamber of Commerce	
Just the Facts	
Mulberry Community Service Center	
National Corn Growers Association	
The Fertilizer Institute	

<b>Table 1-7. Draft AEIS Commenter Category</b>	
<b>Commenter Category</b>	<b>Count of Commenter Type</b>
The Sulfur Institute	
<b>Private Citizen</b>	<b>44</b>
<b>Regional Agency</b>	<b>3</b>
Tampa Bay Regional Planning Council	
PRMRWSA	
Southwest Florida Regional Planning Council	
<b>State Agency</b>	<b>6</b>
Florida Department of Agriculture and Consumer Services	
FDEP	
Florida Department of State	
Florida Fish and Wildlife Conservation Commission	
Southwest Florida Regional Planning Council	
SWFWMD	
<b>Tribal Government</b>	<b>1</b>
Seminole Tribe of Florida	
<b>Applicant Supporters</b>	<b>2,443</b>
<b>Other</b>	<b>3</b>
AccentsAway	
Florida Gulf Coast Building & Construction Trades Council	
Tampa Port Authority	

Many commenters provided multiple comments in their submittals that addressed more than one issue. Individual comments in each submittal were separated by issue and assigned to one or more of 49 issue categories. Of the 1,667 individual comments, the largest number of comments related to NEPA Compliance (524 comments; 17 percent), Surface Water and Water Resources (449 comments; 15 percent), and Ecological Resources (371 comments; 12 percent). Other resource areas receiving approximately 200 comments or more included Groundwater, Cumulative Impacts, and Economics. There were also over 100 individual comments related to Regulatory Process, Alternative Development Process, Mitigation, and Permitted Withdrawals/Discharges. Comments that were part of form letters are discussed separately below under Applicant and Company Comments.

The following subsections characterize the common or substantive themes of the comments for those resource area groupings receiving 5 percent or more of the total individual comments, not counting the 2,443 form letters assigned to Issue Category 6, supporting the Applicants' Preferred Alternatives.

**NEPA Compliance**

Comments related to NEPA compliance addressed the Purpose and Need, compliance with environmental regulations (such as NEPA, the ESA, the CWA and various Executive Orders), and the scope of the Draft AEIS.

***Purpose and Need***

Of the comments in this category, many referenced concerns that the Project Purpose and Need were oriented toward the Applicants versus reflecting priorities of the USACE and the public. There were multiple requests for a revised Purpose and Need statement, as well as a section devoted to the desirable outcomes of the AEIS process. There were multiple comments asserting that the Draft AEIS had failed to demonstrate the need for mining phosphate in Florida at this time, as well as assertions that commercial organic /sustainable farmers have no need for this product.

***Compliance with Environmental Regulations***

Commenters referenced local and state regulations that may affect the selection of offsite alternatives, regulations that SWFWMD has developed related to water use permits, regulations related to phosphate mines and their compliance with the Solid Waste Disposal Act, additional information desired on the Clean Air Act, and a number of regulations that relate to natural resources such as the Migratory Bird Treaty Act and the marine fisheries regulations on essential fish habitat, especially for protected species such as the sawfish. Other commenters suggested that a shorter permit duration should be considered to allow periodic review of project activities.

***Scope of the Draft AEIS***

The balance of the overall NEPA compliance comments related to assertions that the Draft AEIS was incomplete and did not adequately address one or more resource areas or specific stakeholder concerns. Concerns with the scope of the Draft AEIS included requests for expansion in areas related to climate change, the cumulative impacts analysis, the economic values of natural resources, clarification of other areas that have been or are proposed to be mined, and expansion of impacts that relate to areas outside of the CFPD. A common issue raised was a concern that the gypsum stacks are not included in the AEIS analysis.

**Water and Water Resources**

Comments in this category referenced surface water and groundwater resources, and included issues related to water quantity and quality or the methodology used to evaluate the environmental consequences described in the Draft AEIS. The more general issue of water resources included comments related to overall watershed management, water budgets, and recirculation systems, as well as the relationship between groundwater and surface waters.

**Surface Water Resources**

Water quality issues were concerned primarily with the effects of phosphate mining and agricultural land uses on surface water quality and on existing mining activities, Total Maximum Daily Loads (TMDLs) for impaired waters, major constituents, water quality parameters, and numeric nutrient criteria. Other comments related to the adequacy of the Draft AEIS in addressing impacts to coastal and estuarine ecosystems, including downstream changes to water quality. Commenters also requested more information on land use changes that affect the watersheds, impacts to local springs, and more detailed surface water modeling to account for potential decreases in flow for downstream reaches of water bodies. There also were concerns that the Runoff Calculation Method was not sufficiently rigorous and that the analyses should include a sensitivity assessment and validation. Commenters requested that additional studies be performed incorporating integrated groundwater and surface water modeling to better describe cumulative impacts.

**Groundwater Resources**

Comments in this category referenced the methodology used to evaluate the environmental consequences on groundwater resources. Common themes included requests for more extensive modeling to consider the potential impacts to the surficial aquifer system (SAS), incremental effects as well as cumulative effects on regional aquifers, consideration of seasonal pumping rates on groundwater, and evaluation of the potential for groundwater pollution through seepage from other aquifers and saltwater intrusion. There also were requests for presentation of monitoring well data and better descriptions of the linkages between aquifer level drawdowns associated with each mine during pumping. Other comments related to groundwater impacts included requests for greater focus on surface water and groundwater interactions in the CFPD, potential effects on other alternatives considered, and review of the potential impacts in the CFPD where a well-defined intermediate confining unit/intermediate aquifer system is not present.

**Ecological Resources**

Comments related to the methodology used to evaluate potential environmental consequences to ecological resources, as well as to environmental protection, including the protection of water and natural systems. Many comments requested that the potential economic value of the ecological resources, such as native, undisturbed habitats, be assessed. The USFWS noted that ecological resources that are most likely to be affected by the proposed mines or their alternatives include herbaceous and forested wetlands, intermittent and perennial streams, and associated aquatic resource habitats. USFWS requested that the Final AEIS specifically identify and provide an evaluation of the species that might be affected by habitat changes, including birds in the area, and an evaluation of the likely impacts relative to the trends in the status of avian species.

## **Aquatic Ecosystems**

NOAA commented that the project area is in the known distribution limits of a federally listed threatened species and that the USACE should identify actions potentially affecting endangered or threatened species in accordance with the ESA of 1973. Other commenters asserted that there has been a downward trend in macroinvertebrate communities, asked for additional information on potential impacts to stream baseflows related to changes in groundwater flow, and requested improved accounting for intermittent streams and potential effects in general of changes in stream flows on estuarine communities.

## **Wetlands**

Comments included requests for no net loss of wetlands back to 1940, better analyses of the effect of groundwater impacts from mining on wetlands in the CFPD, and clarification of how the quality of wetlands is characterized using the Uniform Mitigation Assessment Method (UMAM) and Wetland Rapid Assessment Procedure (WRAP). There also were requests for clarification on the actual percentage of impacts to wetlands (rather than on the complete mine site) and clarification of those wetlands that would be impacted sequentially throughout mining reclamation and restoration. There also were requests for clarification of whether the aggregated Critical Lands and Waters Identification Project (CLIP) and Integrated Wildlife Habitat Ranking System (IWHRS) data were properly applied.

## **Wildlife and Protected Habitats**

Comments specific to wildlife and protected habitats included issues related to protected species, with particular emphasis on the smalltooth sawfish and species that occupy scrub habitat. Other commenters wanted a more detailed list of avian species and broader discussion of conservation easements and the role they play in providing corridors for wildlife, particularly those areas that are part of the Integrated Habitat Network.

## **Socioeconomic Evaluation**

Comments in this category referenced socioeconomic issues such as economics, demographics, and the environmental justice review. The majority of economic-related comments focused on existing conditions and impacts to employment, taxes, regional economy, and the methodology used to evaluate the impacts to economic resources, including calculation methods, key assumptions supporting the economic analyses, and economic evaluation results format. The USEPA's National Center for Environmental Economics (NCEE) review of the economic analysis suggested improvements for the Final AEIS, including more documentation to support certain assumptions, improved citation of sources, and consideration of the use of a higher discount rate. This included a request for additional discussion on the use of a 50-year time horizon and updated information on the quantity of ore mined for each mine based on existing information. Other comments included requests for additional information on the economic analyses related to recreational fisheries, tourism, and natural resources, alternative uses for lands used

as CSAs, more emphasis on the economic benefits associated with mining, economic impacts associated with the transition between agricultural and mining opportunities, lost opportunity costs related to mining, and a greater assurance of financial responsibility by the operators. There also was a proposal that an alternative economic model (Regional Economic Modeling Inc.) be used instead of IMPLAN.

### **Cumulative Impacts**

Commenters expressed concern that the temporal extent of the cumulative impacts analysis inadequately considered mining associated with current pending permits, that the time frame for the analyses only went to 2060, and that the analyses should provide more clarification of overlapping years of operation, including existing operations that include impacts from ongoing mining. There also was a request that cumulative impacts capture post-mining reclamation that has not attained regulatory goals. Additional comments related to the cumulative effects assigned to agricultural and urban development compared to mining and proposed that all of the impacts be defined on a watershed basis. Other comments related to the inclusion of infill parcels, effects on public water supplies, wetland impact analysis, and the inclusion of other mining-related facilities such as gypsum waste disposal and the operation of fertilizer manufacturing plants.

### **Regulatory Process**

Comments that related to either strengths or inadequacies of the state or federal regulatory review process included comments from the USEPA and the FDEP noting that, as cooperating agencies, they have direct responsibilities for application of appropriate regulatory processes that relate to the implementation of NEPA and the Applicants' Preferred Alternatives. Comments from USEPA generally supported the current approach in the Draft AEIS and requested continued close engagement with both cooperating and participating agencies. Other comments from USEPA included a request for a Responsiveness Summary that would address comments submitted and a statement that some of the wetlands that would be impacted by the Applicants' four proposed projects are considered Aquatic Resources of National Importance.

The FDEP requested that the activities be consistent with the Florida Coastal Management Program and added that final concurrence with this program will be determined during the environmental permitting process. Their comments included a clarification on the interface between the CWA and the appropriate state rules whereby state regulations must be included as part of the federal review process. The FDEP also requested that the sequencing process be included to ensure that the regulations relevant to state permitting ensure water quality protection during and after mining. The Seminole Tribe of Florida requested continuous consultation to ensure that appropriate surveys are conducted where necessary. There also were several comments from counties on policies related to mineral extraction, requesting that the relevant county codes be followed.

**Mitigation**

The bulk of the mitigation comments related to wetland mitigation, Section 404 of the CWA, compliance with the Compensatory Mitigation Rule, mitigation goals and concepts, evolution of technology, mitigation options (including onsite and offsite), mitigation plans for currently proposed mines, reclamation, environmental permitting, and conservation of wildlife and listed species.

USEPA noted that wetland enhancement, restoration, establishment (creation), or preservation projects could serve, in appropriate combinations of activities, to offset unavoidable wetland impacts for the proposed phosphate mining, when such mitigation projects are conducted in accordance with the USACE and USEPA policies and procedures described in the Joint 2008 Mitigation Rule. However, USEPA also noted that the project and mine configurations to be included in the Final AEIS should demonstrate a greater degree of wetland impact avoidance and minimization, and should be substantively reviewed and discussed further in close consultation with USEPA and the Applicants.

More specific comments included discussion on avoidance and minimization in compliance with the Compensatory Mitigation Rule, and evidence that best management practices (BMPs) would be used during phosphate mining to achieve the goals of avoidance and minimization. There also were requests for clarification of use of the UMAM and WRAP in the mitigation analysis. Other questions related to mitigation costs and evidence that the structure and function of mitigation wetlands serve to replace resources impacted. There also were requests for improved consideration of xeric habitats and discussion of the effects of temporal losses associated with wetlands reclamation. These losses result from the time required for wetlands to become established and fully functional. FDEP noted that all lands mined after 1975 must be reclaimed to beneficial uses, with wetlands restored on an acre-for-acre and type-for-type basis.

**Permitted Withdrawals/Discharges**

Comments on the withdrawal of surface water and groundwater for public or private use expressed concerns with the lack of SWFWMD pumping data and consideration of the economic impacts of developing alternative water supplies for public use. There were several comments on the need for seasonal modeling data to evaluate the potential effects of drawdowns during drought periods and periods of peak demands, especially on the freshwater flows to the Peace and Myakka Rivers. Other comments expressed concerns about whether the regulatory cap related to the Southern Water Use Caution Area (SWUCA) would actually be implemented and whether agricultural uses would still have impacts beyond those included as part of the cumulative impacts analysis. There also concerns over potential impacts to Outstanding Florida Waters from NPDES releases and impacts of spills.

## **Alternative Development Process**

These comments raised concerns related to the overall process used to develop the offsite alternatives and other alternatives that should be considered, or opposed using other offsite alternative mine tracts in the CFPD. Some of the primary concerns were that a preferred alternative was not selected, and that alternatives preserving natural resources and permitting recovery of mineable reserves were not adequately considered. Manatee and Sarasota Counties commented on other areas where mining should be avoided. Several comments noted that the proposed setbacks or buffers for onsite alternatives were impractical and had no sound scientific basis. One commenter noted that the rail network and highway system considered for offsite alternatives under-identified local railroads and roadways. There was also a request for additional economic analyses and expansion of reclamation options available to each alternative. The USEPA asked for clarification of the 10-mile limitation on the conveyance of matrix to the beneficiation plant. In addition to the alternative offsite selection process, some commenters suggested alternatives to water for transport of matrix and asked that consideration be given to importing phosphate rock rather than mining in the CFPD.

### **1.8.9.2 Applicant and Company Comments**

As noted earlier, a total of 2,443 form letters were received from constituents of the Applicants as well as 345 and 239 detailed comments submitted by CF Industries and Mosaic, respectively. The detailed comments from the Applicants are provided in Appendix A.

### **1.8.9.3 Applicants' Comment Summary**

The comments received from CF Industries were generally very similar to those provided by Mosaic and addressed many of the same topics addressed by the public, although with differing perspectives. Unlike Mosaic, however, CF Industries expressed the concern that it has fewer opportunities for alternative mining locations or expansions into future operations. Its primary need is to take advantage of the existing beneficiation plant and optimize its current mining plans for the South Pasture Extension. Therefore, CF Industries' comments, in addition to corrections of errors or omissions and recommendations to update specific data sources such as land-use data, included significant discussion of proposed offsite alternatives. A key assumption in the offsite alternative analyses described in Appendix B was that, if need be, an alternative site could use a smaller footprint and develop a new smaller beneficiation plant than might currently be planned or in use. However, CF Industries' expressed the concern that their future operations depend on the use of an existing beneficiation plant rather than a new facility. Consequently, CF Industries' comments noted that their options for offsite alternatives are limited compared to those for Mosaic.

## **1.8.10 Additional Analyses Conducted and Differences Between the Draft AEIS and the Final AEIS**

### **1.8.10.1 Comments Requesting Additional Analyses**

After reviewing all comments and developing responses to the comments, several areas were identified where the comments required additional analyses above and beyond errors, omissions, edits, or other minor clarifications or corrections to the document. The following section describes additional analyses conducted in this Final AEIS in response to comments received.

### **1.8.10.2 Offsite Alternatives**

Following the publication of the Draft AEIS, comments were received on additional areas that should be considered for avoidance as part of the offsite alternatives evaluation. Specific changes to the Final AEIS were made based on:

1. Updated land-use data that included substantial expansion of the railroad and highway network
2. New areas in Sarasota County that would be restricted from future mining
3. New prospecting data for much of the area considered in the offsite alternatives analysis that changed substantially the areas that could be considered as meeting the minimal size for a reasonable alternative to the Applicants' Preferred Alternatives.

The results of this revised analysis of offsite alternatives are included in Chapter 2 of this Final AEIS.

### **1.8.10.3 Onsite Alternatives**

A number of comments noted that the use of buffers and setbacks as applied in the Draft AEIS had an incomplete scientific basis and was unrealistic and impractical from the standpoint of those alternatives in meeting the Purpose and Need. While the inclusion of these buffers and setbacks in the Draft AEIS responded to specific stakeholder comments during scoping, that approach has been replaced in this Final AEIS with a proposed mitigation framework intended to serve as guidance to USACE project managers during their reviews of federal CWA Section 404 permit applications.

The mitigation framework identifies priority-based impact avoidance and minimization criteria and approaches, and outlines how such criteria and approaches should be applied by permit applicants to avoid and minimize impacts to the extent that is reasonable under NEPA and practicable under the Section 404(b)(1) Guidelines. The framework also includes consideration of onsite buffers. This approach is identified in Chapter 2 and described in detail in Chapter 5 of this Final AEIS.

**1.8.10.4 Groundwater**

Based on comments related to concerns about seasonal influences on groundwater withdrawals and the potential interface of impacts between the various groundwater aquifers, an additional extensive analysis applying modified modeling approaches was used to update the evaluation of groundwater impacts. These updated analyses are provided in Chapter 4 of this Final AEIS, with additional details provided in Appendix F.

**1.8.10.5 Surface Water**

Based on comments received on the surface water impact evaluation and potential impacts on public water supplies, additional analyses were performed to address potential surface water impacts during dryer years and during seasonal dry conditions. The analyses included an assessment of the change in days that the PRMRWSA can withdraw water within the limits of its permit conditions. The changes that resulted from these analyses are incorporated into Chapter 4 of this Final AEIS, with additional details provided in Appendix G.

**1.8.10.6 Economic Evaluation**

Based on comments related to alternative approaches and considerations for economic analysis, including updated information on property tax revenue, an extensive re-evaluation of these analyses was conducted. The changes that resulted from this analysis are incorporated into Chapter 4 of this Final AEIS, with additional details provided in Appendix H.